Limited Energy Study of Hangar Facilities at Simmons Army Airfield (SAAF), Fort Bragg, North Carolina

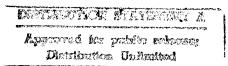
Final Report
Volume 2 of 2
Sections 6-10

CONTRACT #DACA01-94-D-0034 DELIVERY ORDER 0004 SYSTEMS CORP PROJECT #94013.04

April 26, 1995



Savannah District-US Army Corps of Engineers



DEPARTMENT OF THE ARMY

CONSTRUCTION ENGINEERING RESEARCH LABORATORIES, CORPS OF ENGINEERS P.O. BOX 9005

CHAMPAIGN, ILLINOIS 61826-9005

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Librarian Engineering

ECO - 1 CALCULATIONS

LIMITED ENERGY STUDY OF HANGAR FACILITIES AT SIMMONS ARMY AIRFIELD, FT. BRAGG, NC

This section contains the life-cycle cost analyses, energy calculations, and cost estimates for ECO-1: Install High Efficiency Interior/Exterior Lighting Systems. For the buildings in this ECO, multiple options have been calculated when applicable. These options include:

- 1. Fluorescent fixture replacement
- DTIC QUALITY INSPECTED 2
- 2. Incandescent lamp replacement
- 3. Exit sign replacement
- 4. Mercury vapor fixture replacement
- 5. Conventional sky light installation with automatic lighting control

A single life-cycle cost analysis and cost estimate was performed for each building which grouped all applicable options together.

The following pages contain the analysis for the Airfield buildings. These buildings contained a variety of fixtures. The following table details the replacement fixtures used.

TABLE 6.1							
LIGHTING FIXTURE REPLACEMENTS AND INSTALLATIONS							
EXISTING FIXTURE	REPLACEMENT FIXTURE	NOTES					
T-12 Fluorescent	T-8 Fluorescent with electronic ballast	A one-for-one lamp replacement with two- lamp fixtures. Three- and four- lamp fixtures were replaced by two- and three-lamp fixtures respectively, with reflectors added.					
Incandescent Compact Fluorescent		Incandescents larger than 200-watts in office areas were replaced with two- lamp, 4', T-8 fixtures.					
Incandescent Exit Signs	LED Retrofit Kit	Existing fixture remains, incandescent lamps are removed and replaced by LED lamps.					
Mercury Vapor Metal Halide		One-for-one lamp replacement. 1,000- watt mercury vapors were replaced with 400-watt metal halides; 400-watt mercury vapors were replaced with 250- watt metal halides.					
Exterior Lights	High Pressure Sodium (HPS)	Wattage of HPS based on equivalent lumen output of existing fixture.					
	Conventional Sky Lights	Evaluated for high bay hangar use every 600 sq. ft. Includes automatic lighting control.					

6 ECO - 1 CALCULATIONS

LIMITED ENERGY STUDY OF HANGAR FACILITIES AT SIMMONS ARMY AIRFIELD, FT. BRAGG, NC LCCA FOR AIR FIELD LIGHTING PROJECT 6-4 ECO-1 CALCULATIONS: (sorted by building) BUILDING 2936 **BUILDING 3007 BUILDING 3262 BUILDING 3354 BUILDING 3637** LCCA 6-42 BUILDING 3642 **BUILDING 3807 BUILDING 3954**

 LCCA
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 Calculations
 6-78

 Cost Estimates
 6-81

6 ECO - 1 CALCULATIONS

LIMITED ENERGY STUDY OF HANGAR FACILITIES AT SIMMONS ARMY AIRFIELD, FT. BRAGG, NC

BUILDING 3962 LCCA	6-90
BUILDING 4137 LCCA	6-103
BUILDING 4242 LCCA	6-116
BUILDING 7937 LCCA	6-127
BUILDING 8944 LCCA	6-139
BUILDING 9647 LCCA	6-150
NON-RECOMMENDED LIGHTING ANALYSES	6-161
BUILDING 2936 LCCA	6-161 6-162 6-165
BUILDING 3007 LCCA	6-169 6-170 6-172

LCCA

for Air Field Lighting Project

```
LIFE CYCLE COST ANALYSIS SUMMARY
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP)

LCCID FY95
   INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3
                                                          LCCID FY95 (92)
   PROJECT NO. & TITLE: ECO1 LIGHTING UPGRADE & SKY LIGHTS @ HANGARS
   FISCAL YEAR 95 DISCRETE PORTION NAME: LIGHTING
   ANALYSIS DATE: 02-03-95 ECONOMIC LIFE 10 YEARS PREPARED BY: JAH
   1. INVESTMENT
   A. CONSTRUCTION COST
                          $ 618894.
   B. SIOH
                                 30945.
   C. DESIGN COST
                                 30945.
   D. TOTAL COST (1A+1B+1C) $ 680783.
   E. SALVAGE VALUE OF EXISTING EQUIPMENT $
   F. PUBLIC UTILITY COMPANY REBATE $
                                                  0.
  G. TOTAL INVESTMENT (1D - 1E - 1F)
                                                  0.
                                                      $
                                                          680783.
  2. ENERGY SAVINGS (+) / COST (-)
  DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993
               UNIT COST SAVINGS ANNUAL $ DISCOUNT $/ MWH(1) MWH/YR(2) SAVINGS(3) FACTOR(4)
      FUEL
                                                                DISCOUNTED
                                        SAVINGS(3) FACTOR(4) SAVINGS(5)
      A. ELECT $ 34.95
                            2140.
      B. DIST $ .00
                                            74780.
                                                        8.77
                              0.
                                                                    655823.
      C. RESID $
                                            0.
                                                        9.26
                  .00
                               0.
                                                                     0.
     D. NAT G $
                                               Ο.
                           0. $ 0.

0. $ 0.

0. $ 0.

0. $ 70144.

2140. $ 144924.
                                                       10.08
                 .00
                                                                        0.
     E. COAL $
                                               0.
                  .00
                                                       10.39
     F. LPG $ .00
                                                                        0.
                                               0.
                                                       9.39
                                                                        0.
                                            0.
     M. DEMAND SAVINGS
                                                        8.78
     N. TOTAL
                                          70144.
                                                                        0.
                                                        8.49
                                                                  595523.
                                                               $ 1251345.
 3. NON ENERGY SAVINGS(+) / COST(-)
    A. ANNUAL RECURRING (+/-)
       (1) DISCOUNT FACTOR (TABLE A)
                                                                  22997.
        (2) DISCOUNTED SAVING/COST (3A X 3A1)
                                                      8.49
                                                                   195245.
    B. NON RECURRING SAVINGS(+) / COSTS(-)
                            SAVINGS(+) YR
                                              DISCNT
                ITEM
                                                        DISCOUNTED
                             COST(-) OC FACTR
(1) (2) (3)
                                                        SAVINGS(+)/
                                                      COST(-)(4)
    d. TOTAL
                            $
                                   0.
   C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)$ 195245.
4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))$ 167921.
5. SIMPLE PAYBACK PERIOD (1G/4)
                                                                 4.05 YEARS
6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C)
                                                              $ 1446590.
7. SAVINGS TO INVESTMENT RATIO
   (IF < 1 PROJECT DOES NOT QUALIFY)
                                     (SIR) = (6 / 1G) =
                                                                2.12
8. ADJUSTED INTERNAL RATE OF RETURN (AIRR):
                                                              11.17 %
```

ECO-1 CALCULATIONS (sorted by building)

```
LIFE CYCLE COST ANALYSIS SUMMARY STUDY: 2936H
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID FY95 (92)
INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 2936H SKY LIGHTS & CONTROLS @ BLDG 2936
FISCAL YEAR 95 DISCRETE PORTION NAME: LIGHTING
ANALYSIS DATE:
                02-03-95 ECONOMIC LIFE 10 YEARS PREPARED BY: JAH
1. INVESTMENT
A. CONSTRUCTION COST
                                25134.
                                1257.
B. SIOH
                                 1257.
C. DESIGN COST
D. TOTAL COST (1A+1B+1C) $
E. SALVAGE VALUE OF EXISTING EQUIPMENT $
                                                 0.
F. PUBLIC UTILITY COMPANY REBATE
G. TOTAL INVESTMENT (1D - 1E - 1F)
                                                            27647.
2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993
             UNIT COST SAVINGS ANNUAL $ DISCOUNT DISCOUNTED $/ MWH(1) MWH/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5)
    FUEL
            $/ MWH(1)
    A. ELECT $ 34.95
                             75.
                                            2612.
                                                        8.77
                                                                      22911.
                                       $ 0.
$ 0.
$ 0.
$ 0.
$ 0.
$ 2537.
                              0.
                                                        9.26
                                                                          0.
    B. DIST $ .00
                                                                          С.
                              0.
                                                       10.08
    C. RESID $
                 .00
                             0.
0.
                                                       10.39
                                                                          0.
    D. NAT G S
                 .00
    E. COAL $
                 .00
                                                        9.39
                                                                          0.
                                                        8.78
    F. LPG
             $ .00
                              0.
                                                                          0.
                                                        8.49
                                                                      21539.
    M. DEMAND SAVINGS
    N. TOTAL
                              75.
                                            5149.
                                                                      44450.
3. NON ENERGY SAVINGS(+) / COST(-)
                                                                 $
                                                                      477.
   A. ANNUAL RECURRING (+/-)
       (1) DISCOUNT FACTOR (TABLE A)
                                                       8.49
       (2) DISCOUNTED SAVING/COST (3A X 3A1)
                                                                     4050.
   B. NON RECURRING SAVINGS(+) / COSTS(-)
                             SAVINGS(+) YR DISCNT DISCOUNTED
COST(-) OC FACTR SAVINGS(+),
(1) (2) (3) COST(-)(4)
               ITEM
                                                           SAVINGS(+)/
                             $ 0.
   d. TOTAL
   C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)$ 4050.
4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))$ 5626.
                                                                    4.91 YEARS
5. SIMPLE PAYBACK PERIOD (1G/4)
6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C)
                                                                $
                                                                     48499.
                                       (SIR) = (6 / 1G) =
                                                                    1.75
7. SAVINGS TO INVESTMENT RATIO
    (IF < 1 PROJECT DOES NOT QUALIFY)
8. ADJUSTED INTERNAL RATE OF RETURN (AIRR):
                                                                    9.06 %
```

61,776 KWHMR \$5,495 MR \$8,733 MR O KW (WITHOUT SKYLIGHTS) (WITH SKYLIGHTS) OF HANGAR FACILITIES AT SIMMONS ARMY AIRFIELD PER KWH PER KW **NET DEMAND SAVINGS NET DOLLAR SAVINGS** FORT BRAGG LIMITED ENERGY STUDY \$0.03495 1,248 \$807 / YEAR \$323 / YEAR **ECO ENERGY CONSUMPTION** REVISED USAGE: HOURS/YEAR ELECTRIC COSTS: ENERGY CHARGE DEMAND CHARGE ECO 1: INTERIOR / EXTERIOR LIGHTING 02 FEBRUARY 1995 CONVENTIONAL SKY LIGHTS IN HANGARS \$484 N'EAR MAINTENANCE SAVINGS **ECO DEMAND** 3,120 HRWR = 1,248 HRWR = 154,440 KWH/YR 92,664 KWH/YR 49.5 KW **NET MAINTENANCE SAVINGS** \$47.00 / 20,000 HOURS • \$47.00 / 20,000 HOURS • 49,500 W 1 (1-YES, 0-NO) 3,120 BUILDING #: 2936 - HANGAR BASELINE ENERGY CONSUMPTION **NET ENERGY SAVINGS** 110 LAMPS @ 110 LAMPS @ WATTAGE CONTROLLED: PEAK USE: CURRENT USAGE: HOURS/YEAR **BASELINE DEMAND**

\$0 \$15,883

UOO

Estimate: BLDG 2936 Date: FEBRUARY 2, 1995
Description: CONVENTIONAL SKYLIGHT & CONTROLS
Project: HANGAR STUDY Bid Date: FEBRUARY 2, 1995
Location: BLDG 2936 Job #: 94013.04 Sq. footage: City indx:Raleigh, NC Line # Description Manhours Matl Labor Equipment Sub Total 0060000001 CONVENTIONAL SKYLIGHT WITH 4" INSULATED CURBS 720.00 SQ. FT (DOUBLE PANED) 0.00 19.56 2.41 0.00 \$14,083 \$1,735 0.00 22.06 0.09 Unit values \$65 \$0 \$15,883 Totals

0 \$14,083 \$1,735 \$65

Line #	Description	on				
	Manhours	Matl	Labor	Equipment	Sub	Total
=======================================	========	========		========		
1611350023	LOW VOLTAG	GE WIRE #1	18-4C		14.00	CLF
Unit values Totals	1.23 17.22	15.40 \$216	34.00 \$476	0.00 \$0	0.00	49.40 \$692
1611750101	LIGHTING (CONTACTOR				77
Unit values Totals	2.00 12.00	137.00 \$822	55.00 \$330	0.00 \$0	6.00 0.00 \$0	192.00 \$1,152
1611850101	PHOTO SWIT	TCH 50-500	FC ADJU	STABLE	4 00	7.
Unit values Totals	1.00 4.00	290.00 \$1,160	27.50 \$110	0.00 \$0	4.00 0.00 \$0	317.50 \$1,270
1611870101	LOW VOLTAG	SE TRANS 1	L15V-24V			
Unit values Totals	0.67 0.67	64.00 \$64	18.35 \$18	0.00 \$0	1.00 0.00 \$0	82.35 \$82
1611870102	SWITCHING	RELAYS				~
Unit values Totals	0.50 4.00	11.30 \$90	13.75 \$110	0.00	8.00 0.00 \$0	25.05 \$200
1611950101	1/2" EMT				500.00	· -
Unit values Totals	0.05 25.00	0.38 \$190	1.29 \$645	0.00 \$0	500.00 0.00 \$0	1.67 \$835
U16 ELECTRICAL	63	\$2,542	\$1,689	\$0	\$0	\$4,231

Line #	Descripti	.on				
	Manhours	Matl	Labor	Equipment	Sub	Total
ESTIMATE TOTAL	. 63	\$16,625	\$3,424	\$65	\$0	\$20,114
SALES TAX MATL MARKUP	5.00% 0.00%	\$831 \$0	\$ 0			
LABOR MARKUP EQUIPT MARKUP SUB MARKUP	0.00% 0.00% 0.00%		\$0	\$0	\$0	
TOTAL BEFORE C CONTINGENCY BOND PROFIT	ONTINGENC 5.00% 5.00% 10.00%	\$17,456	\$3,424	\$65	\$0	\$20,945 \$1,047 \$1,047 \$2,095
JOB TOTAL						\$25,134

JOB TOTAL

Estimate: BLDG 2936 Date: FEBRUARY 2, 1995
Description: CONVENTIONAL SKYLIGHT & CONTROLS
Project: HANGAR STUDY Bid Date: FEBRUARY 2, 1995
Location: BLDG 2936 Job #: 94013.04
City indx:Raleigh, NC

=======================================						
	Manhours	Matl	Labor	Equipment	Sub	Total
=======================================						
U00 U16 ELECTRICAL	0 63	\$14,083 \$2,542	\$1,735 \$1,689	\$65 \$0	\$0 \$0	\$15,883 \$4,231
TOTAL	63	\$16,625	\$3,424	\$65	\$0	\$20,114
SALES TAX MATL MARKUP LABOR MARKUP EQUIPT MARKUP SUB MARKUP	5.00% 0.00% 0.00% 0.00% 0.00%	\$831 \$0	\$0	\$0	\$0	
TOTAL BEFORE C CONTINGENCY BOND PROFIT	ONTINGENC 5.00% 5.00% 10.00%	\$17,456	\$3,424	\$65	\$0	\$20,945 \$1,047 \$1,047 \$2,095
JOB TOTAL						\$25,134

ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP)

LLATION & LOCATION: FORT BRACE LCCID FY95 (92) INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3 PROJECT NO. & TITLE: 3007H SKY LIGHTS & CONTROLS @ BLDG 3007 FISCAL YEAR 95 DISCRETE PORTION NAME: LIGHTING 02-03-95 ECONOMIC LIFE 10 YEARS PREPARED BY: JAH ANALYSIS DATE: 1. INVESTMENT 26794. A. CONSTRUCTION COST \$ 1340. B. SIOH 1340. C. DESIGN COST D. TOTAL COST (1A+1B+1C) \$ 29473. E. SALVAGE VALUE OF EXISTING EQUIPMENT \$ 0. F. PUBLIC UTILITY COMPANY REBATE 0. Ś G. TOTAL INVESTMENT (1D - 1E - 1F) 29473. 2. ENERGY SAVINGS (+) / COST (-) DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993 ANNUAL \$ DISCOUNT DISCOUNTED UNIT COST SAVINGS SAVINGS(3) FACTOR(4) SAVINGS(5) FUEL \$/ MWH(1) MWH/YR(2) 1767. 8.77 15492. A. ELECT \$ 34.95 51. 9.26 0. 0. B. DIST \$.00 0. 10.08 0. .00 0. 0. C. RESID \$ 10.39 0. D. NAT G S .00 0. 0. .00 0. 0. 9.39 0. E. COAL \$ 0. 8.78 0. 0. F. LPG \$.00 2997. 8.49 25445. M. DEMAND SAVINGS 51. 4764. 40937. N. TOTAL 3. NON ENERGY SAVINGS(+) / COST(-) 267. A. ANNUAL RECURRING (+/-) (1) DISCOUNT FACTOR (TABLE A) 8.49 (2) DISCOUNTED SAVING/COST (3A X 3A1) 2267. B. NON RECURRING SAVINGS(+) / COSTS(-) SAVINGS(+) YR DISCNT COST(-) OC FACTR DISCOUNTED COST(-) SAVINGS(+)/ ITEM COST(-)(4)(1) (2) (3) 0. 0. d. TOTAL C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)\$ 4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))\$ 5031. 5.86 YEARS 5. SIMPLE PAYBACK PERIOD (1G/4) 43204. 6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) 7. SAVINGS TO INVESTMENT RATIO (SIR) = (6 / 1G) =1.47 (IF < 1 PROJECT DOES NOT QUALIFY) 7.12 % 8. ADJUSTED INTERNAL RATE OF RETURN (AIRR):

33,696 KWH/YR ₹ \$2,997 MR \$4,764 MR (WITHOUT SKYLIGHTS) (WITH SKYLIGHTS) 27 OF HANGAR FACILITIES AT SIMMONS ARMY AIRFIELD PER KWH PER KW NET DEMAND SAVINGS NET DOLLAR SAVINGS \$0.03495 FORT BRAGG LIMITED ENERGY STUDY 1,248 \$445 / YEAR \$178 / YEAR ECO ENERGY CONSUMPTION REVISED USAGE: HOURS/YEAR ELECTRIC COSTS. ENERGY CHARGE DEMAND CHARGE ECO 1: INTERIOR / EXTERIOR LIGHTING 02 FEBRUARY 1895 CONVENTIONAL SKY LIGHTS IN HANGARS \$267 NEAR **ECO DEMAND** MAINTENANCE SAVINGS 3,120 HRYR = 1,248 HRYR = 84,240 KWH/YR 50,544 KWH/YR ₹ **NET MAINTENANCE SAVINGS** \$38.00 / 24,000 HOURS • \$38.00 / 24,000 HOURS • 1 (1-YES, 0-NO) 27,000 W 3,120 BUILDING #: 3007 - HANGAR BASELINE ENERGY CONSUMPTION **NET ENERGY SAVINGS** 90 LAMPS @ 90 LAMPS @ WATTAGE CONTROLLED: PEAK USE: CURRENT USAGE HOURS/YEAR BASELINE DEMAND

Estimate: BLDG 3007 Date: FEBRUARY 2, 1995 Description: CONVENTIONAL SKYLIGHT & CONTROLS
Project: Bid Date: FEBRUARY 2, 1995 Project: Location: Job #: 94013.04 BLDG 3007 City indx: Raleigh, NC Description Line # Manhours Matl Labor Equipment Sub Total CONVENTIONAL SKYLIGHT WITH 4" INSULATED CURBS 0060000001 780.00 SQ. FT (DOUBLE PANED) 0.00 22.06 2.41 0.09 19.56 2.41 \$15,257 \$1,880 0.00 19.56 Unit values \$70 \$17,207 \$0 0.00 Totals \$17,207 \$0 \$70 \$15,257 \$1,880 0 UOO

Line #	Description	on				
	Manhours	Matl	Labor	Equipment	Sub	Total
=======================================	=======================================					
1611350023	LOW VOLTA	GE WIRE #1	18-4C		14.00	
Unit values Totals	1.23 17.22	15.40 \$216	34.00 \$476	0.00 \$0	0.00	49.40 \$692
1611750101	LIGHTING	CONTACTOR			6.00	EA.
Unit values Totals	2.00 12.00	137.00 \$822	55.00 \$330	0.00 \$0	0.00	192.00 \$1,152
1611850101	PHOTO SWI	rch 50-500	FC ADJU	STABLE	4.00	EA.
Unit values Totals	1.00 4.00	290.00 \$1,160	27.50 \$110	0.00 \$0	0.00	317.50 \$1,270
1611870101	LOW VOLTA	GE TRANS	115V-24V		1.00	EA.
Unit values Totals	0.67 0.67	64.00 \$64	18.35 \$18		0.00	82.35 \$82
1611870102	SWITCHING	RELAYS			8.00	EA.
Unit values Totals	0.50 4.00	11.30 \$90	13.75 \$110		0.00	25.05 \$200
1611950101	1/2" EMT				500.00	T.F
Unit values Totals	0.05 25.00	0.38 \$190	1.29 \$645		0.00	1.67 \$835
U16 ELECTRICAL	63	\$2,542	\$1,689	\$0	\$0	\$4,231

=======================================	========	========	======	========	=======	
Line #	Descripti	on				
	Manhours	Matl	Labor	Equipment	Sub	Total

ESTIMATE TOTAL	63	\$17,799	\$3,569	\$70	\$0	\$21,438
SALES TAX MATL MARKUP	5.00% 0.00%	\$890 \$0	\$0			
LABOR MARKUP EQUIPT MARKUP SUB MARKUP	0.00% 0.00% 0.00%		ŞU	\$0	\$0	
TOTAL BEFORE C CONTINGENCY BOND PROFIT	ONTINGENC 5.00% 5.00% 10.00%	\$18,689	\$3,569	\$70	\$0	\$22,328 \$1,116 \$1,116 \$2,233
JOB TOTAL						\$26,794

Estimate: BLDG 3007 Date: FEBRUARY 2, 1995
Description: CONVENTIONAL SKYLIGHT & CONTROLS
Project: HANGAR STUDY Bid Date: FEBRUARY 2, 1995
Location: BLDG 3007 Job #: 94013.04

Sq. footage:

Job #: 94013.04 City indx:Raleigh, NC

S	UMMARY

	S	OPHINIC				
	Manhours	Matl	Labor	Equipment	Sub	Total
===========	=======		======			
U00 U16 ELECTRICAL	0 63	\$15,257 \$2,542	\$1,880 \$1,689	\$70 \$0	\$0 \$0	\$17,207 \$4,231
TOTAL	63	\$17,799	\$3,569	\$70	\$0	\$21,438
SALES TAX MATL MARKUP LABOR MARKUP	5.00% 0.00% 0.00%	\$890 \$0	\$0	\$0		
EQUIPT MARKUP SUB MARKUP	0.00% 0.00%			ŞU	\$0	
TOTAL BEFORE C CONTINGENCY BOND PROFIT	ONTINGENC 5.00% 5.00% 10.00%	\$18,689	\$3,569	\$70	\$0	\$22,328 \$1,116 \$1,116 \$2,233
JOB TOTAL						\$26,794

ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID FY95 (92) INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3 PROJECT NO. & TITLE: 3262 SKY LIGHTS & LIGHTING PRODUCTS @ HANGARS FISCAL YEAR 95 DISCRETE PORTION NAME: LIGHTING ANALYSIS DATE: 02-03-95 ECONOMIC LIFE 10 YEARS PREPARED BY: JAH 1. INVESTMENT 85498. A. CONSTRUCTION COST \$ 4275. B. SIOH 4275. C. DESIGN COST D. TOTAL COST (1A+1B+1C) \$ 94048. E. SALVAGE VALUE OF EXISTING EQUIPMENT \$ F. PUBLIC UTILITY COMPANY REBATE 0. G. TOTAL INVESTMENT (1D - 1E - 1F) 94048. 2. ENERGY SAVINGS (+) / COST (-) DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993 UNIT COST SAVINGS ANNUAL \$ DISCOUNT \$/ MWH(1) MWH/YR(2) SAVINGS(3) FACTOR(4) DISCOUNTED FUEL SAVINGS(5) 8.77 420. A. ELECT \$ 34.95 14681. 128753. 0. 0. B. DIST \$.00 9.26 0. C. RESID \$.00 0. 0. 10.08 0. .00 0. 10.39 D. NAT G \$ 0. 0. 0. E. COAL S .00 0. 9.39 0. \$ 0. \$ 9681. F. LPG \$.00 8.78 0. 0. M. DEMAND SAVINGS 8.49 82192. 420. \$ 24362. 210945. N. TOTAL 3. NON ENERGY SAVINGS(+) / COST(-) 1985. A. ANNUAL RECURRING (+/-)(1) DISCOUNT FACTOR (TABLE A) 8.49 16853. (2) DISCOUNTED SAVING/COST (3A X 3A1) B. NON RECURRING SAVINGS(+) / COSTS(-) SAVINGS(+) YR DISCNT
COST(-) OC FACTR
(1) (2) (3) DISCOUNTED SAVINGS(+)/ ITEM COST(-)(4) d. TOTAL \$ 0. C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)\$ 16853. 4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))\$ 3.57 YEARS 5. SIMPLE PAYBACK PERIOD (1G/4) \$ 227797. 6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) (SIR) = (6 / 1G) =7. SAVINGS TO INVESTMENT RATIO 2.42 (IF < 1 PROJECT DOES NOT QUALIFY) 8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): 12.64 %

LIFE CYCLE COST ANALYSIS SUMMARY

STUDY: 3262

PORT BRAGG LIMITED ENERGY STUDY	DENERGY STUDY IMMONS ARMY AIRFIELD ERIOR LIGHTING 11994 IT FIXTURE REPLACEMENT ELECTRIC COSTS: ENERGY CHARGE \$0.03495 PER KWH \$0.03495 PER KWH EPLACEMENT FIXTURE DATA 2 FOOT 0 2 LAMP U @ 58 W/FIXT = 0 WATTS 4 FOOT 113 2 LAMP @ 87 W/FIXT = 2,956 WATTS 34 3 LAMP @ 125 W/FIXT = 10,750 WATTS 8 FOOT 8 FOOT 8 FOOT 8 CO ENERGY CONSUMPTION 132,757 KWHYPR ECO ENERGY CONSUMPTION 133,757 KWHYPR
NET ENERGY SAVINGS 58,077 KWH/YR	NET DEMAND SAVINGS \$984 MR NET DOLLAR SAVINGS \$3,014 MR

(4' FLUORESCENT LAMPS)

\$59 / YEAR

6,570 HR/YR =

MAINTENANCE SAVINGS

\$59 MEAR

\$5.00 / 20,000 HOURS *
NET MAINTENANCE SAVINGS

36 LAMPS @

0 WATTS 0 WATTS 32,400 WATTS 0 WATTS 212,285 KWH/YR 32.40 KW \$4,995 MR \$15,300 MR (MERCURY VAPOR) (METAL HALIDE) OF HANGAR FACILITIES AT SIMMONS ARMY AIRFIELD PER KWH PER KW 450 WATTS = WATTS = WATTS = WATTS = WATTS = **NET DEMAND SAVINGS NET DOLLAR SAVINGS** FORT BRAGG LIMITED ENERGY STUDY \$0.03495 \$2,070 / YEAR \$1,112 / YEAR REPLACEMENT FIXTURE DATA ECO ENERGY CONSUMPTION INTERIOR LIGHTING: LIGHTING REPLACEMENT ELECTRIC COSTS: ENERGY CHARGE DEMAND CHARGE ECO 1: INTERIOR / EXTERIOR LIGHTING 16 DECEMBER 1994 MH @ @ WH @ WH B B @ WH B B @ WH B B WH \$958 N'EAR MAINTENANCE SAVINGS **ECO DEMAND** 00020 6,570 HR/YR = 6,570 HR/YR = 507,125 KWH/YR 294,840 KWH/YR 77.40 KW **NET MAINTENANCE SAVINGS** \$47.00 / 20,000 HOURS * \$47.00 / 20,000 HOURS * 0 WATTS 0 WATTS 77,400 WATTS 0 WATTS 1 (1-YES, 0-NO) WATTS = WATTS = 1075 WATTS = WATTS = WATTS = BASELINE ENERGY CONSUMPTION **NET ENERGY SAVINGS** 72 LAMPS @ 72 LAMPS @ 18 | |-BUILDING #: 3262 **EXISTING FIXTURE DATA** INCAND @ QUARTZ @ QUARTZ @_ BASELINE DEMAND AREA USE: HOURS/DAY DAYS/WEEK PEAK USE

1,533 KWH/YR 0 WATTS 234 WATTS 0 WATTS 0 WATTS 0 WATTS Ž (INCANDESCENT) (COMPACT FLUORESCENT) \$94 MR \$288 MR 0.23 OF HANGAR FACILITIES AT SIMMONS ARMY AIRFIELD PER KWH PER KW 13 W/FIXT = 13 W/FIXT = 18 W/FIXT = 26 W/F COMPACT FLUORESCENT REPLACEMENT **NET DEMAND SAVINGS** NET DOLLAR SAVINGS FORT BRAGG LIMITED ENERGY STUDY \$0.03495 \$552 / YEAR \$24 / YEAR ECO ENERGY CONSUMPTION INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT O LAMPS @ LAMPS @ O LAMPS @ C LAMPS **ECO 1: INTERIOR / EXTERIOR LIGHTING** ELECTRIC COSTS. ENERGY CHARGE DEMAND CHARGE \$528 NEAR MAINTENANCE SAVINGS **ECO DEMAND** 6,570 HR/YR = 6,570 HR/YR = **16 DECEMBER 1994** 7,076 KWH/YR 5,543 KWH/YR ξ **NET MAINTENANCE SAVINGS** 1.08 \$3.50 / 750 HOURS * \$2.00 / 10,000 HOURS * 0 WATTS 0 WATTS 0 WATTS 1,080 WATTS 0 WATTS 1 (1-YES, 0-NO) 52 W/FIXT = 60 W/FIXT = 75 W/FIXT = 90 W/FIXT = 100 W/FIX BUILDING #: 3262 - HANGAR BASELINE ENERGY CONSUMPTION **NET ENERGY SAVINGS** 18 LAMPS @ 18 LAMPS @ EXISTING INCANDESCENTS AREA USE:_ LAMPS @ LAMPS @ LAMPS @ LAMPS @ LAMPS @ BASELINE DEMAND DAYSAWEEK PEAK USE HOURS/DAY Hi in High

105 KWHYR (INCANDESCENT) (COMPACT FLUORESCENT) 0.01 KW \$12 MR \$45 MR REPLACEMENT SIGNS OF HANGAR FACILITIES AT SIMMONS ARMY AIRFIELD PER KWH PER KW # OF EXIT SIGNS: WATTAGE: NET DEMAND SAVINGS NET DOLLAR SAVINGS FORT BRAGG LIMITED ENERGY STUDY \$0.03495 \$123 / YEAR \$0 / YEAR ECO ENERGY CONSUMPTION INTERIOR LIGHTING: EXIT SIGN REPLACEMENT ELECTRIC COSTS: ENERGY CHARGE DEMAND CHARGE ECO 1: INTERIOR / EXTERIOR LIGHTING 16 DECEMBER 1994 \$123 NEAR MAINTENANCE SAVINGS **ECO DEMAND** 0 48 8,760 HR/YR = HR/YR = FLUORESCENT EXIT SIGNS # OF EXIT SIGNS: WATTAGE: 1,051 KWH/YR 946 KWH/YR 0.12 KW **NET MAINTENANCE SAVINGS** \$3.50 / 1,000 HOURS • / 10,000 HOURS • 8 4 BUILDING #; 3262 - HANGAR BASELINE ENERGY CONSUMPTION INCANDESCENT EXIT SIGNS **NET ENERGY SAVINGS** 4 LAMPS @____LAMPS @__ WATTAGE: # OF EXIT SIGNS: BASELINE DEMAND

40,435 KWHNR ₹ \$3,596 MR \$5,716 MR (WITHOUT SKYLIGHTS) (WITH SKYLIGHTS) 32.4 OF HANGAR FACILITIES AT SIMMONS ARMY AIRFIELD PER KWH PER KW **NET DEMAND SAVINGS NET DOLLAR SAVINGS** FORT BRAGG LIMITED ENERGY STUDY \$0.03495 1,248 \$528 / YEAR \$211 / YEAR **ECO ENERGY CONSUMPTION** REVISED USAGE: HOURS/YEAR ELECTRIC COSTS. ENERGY CHARGE 32,400 W (AFTER LIGHTING REPLACEMENT) 1 (1-YES, 0-NO) **ECO 1: INTERIOR / EXTERIOR LIGHTING** CONVENTIONAL SKY LIGHTS IN HANGARS \$317 N'EAR MAINTENANCE SAVINGS **ECO DEMAND** 3,120 HR/YR = 1,248 HR/YR = 02 FEBRUARY 1995 101,088 KWH/YR 60,653 KWH/YR ₹ **NET MAINTENANCE SAVINGS** \$47.00 / 20,000 HOURS * \$47.00 / 20,000 HOURS * 3,120 3262 - HANGAR **NET ENERGY SAVINGS** BASELINE ENERGY CONSUMPTION 72 LAMPS @ 72 LAMPS @ WATTAGE CONTROLLED: PEAK USE: CURRENT USAGE: HOURS/YEAR BASELINE DEMAND BUILDING #:

FEBRUARY 2, 1995 LIGHTING UPGRADE Date: Estimate: LIGHTING PRODUCT UPGRADE Description: Bid Date: FEBRUARY 2, 1995 HANGAR LIGHTING Project: Job #: 94013.04 BLDG 3262 Location: City indx:Raleigh, NC Sq. footage: Description Line # Sub Total Equipment Manhours Matl _______ DEMOLITION, 2X4 FLUORESCENT FIXTURES 0002000000 40.00 FIXTURE 13.35 0.00 0.00 13.35 0.00 0.49 Unit values \$0 \$534 \$0 \$534 \$0 19.60 Totals DEMOLITION, INCANDESCENT FIXTURES/EXIT SIGNS 0002010000 22.00 FIXTURE 0.00 0.00 7.10 0.00 7.10 0.26 Unit values \$0 \$156 \$0 5.72 \$0 \$156 Totals DEMOLITION, 1X4 FLUORESCENT FIXTURES 0002020000 193.00 FIXTURE 0.00 0.00 13.35 0.00 13.35 0.49 Unit values \$0 \$0 \$2,577 \$0 \$2,577 94.57 Totals DEMOLITION, HIGH BAY FIXTURES 0002030000 72.00 FIXTURE 27.50 0.00 0.00 27.50 0.00 1.00 Unit values \$1,980 \$0 \$0 \$1,980 \$0 72.00 Totals 2X4 2-32 WATT FLUORESCENT LAMPS, RECESSED 0010100000 4.00 FIXTURE MOUNTED 0.00 100.50 41.50 0.00 1.51 59.00 Unit values \$402 \$166 \$0 \$0 \$236 6.04 Totals 1X4 2-32 WATT FLUORESCENT LAMPS, RECESSED 0010200000 101.00 FIXTURE MOUNTED 0.00 0.00 82.50 51.00 31.50 1.14 Unit values \$0 \$8,333 \$3,182 \$0 \$5,151 115.14 Totals 1X4 2-32 WATT FLUORESCENT LAMPS, WALL MOUNTED 0010300000 6.00 FIXTURE 0.00 91.50 31.50 0.00 60.00 1.14 Unit values \$0 \$549 \$189 \$0 6.84 \$360 Totals 2X4 2-32 WATT FLUORESCENT LAMPS, RECESSED 0010500000 2.00 FIXTURE MOUNTED WITH REFLECTORS 0.00 0.00 116.50 75.00 41.50 1.51 Unit values \$0 \$233 \$0 \$150 \$83 Totals 3.02 1X8 2-59 WATT FLUORESCENT LAMPS, PENDANT 0010600000 86.00 FIXTURE MOUNTED

02-Feb-95			Page 2			
Unit values Totals		131.00 \$11,266			0.00	179.12 \$15,404
0010700000	LED EXIT	SIGN, RETR	OFIT KIT		4 00	FIXTURE
Unit values Totals		35.00 \$140			0.00	62.50 \$250
0011000000	400 WAT	r METAL HAL	IDE FIXTUR	E	50.00	
Unit values Totals		207.00 \$14,904		0.00 \$0	0.00	FIXTURE 262.00 \$18,864
0011100000		COMPACT FL	UORESCENT	FIXTURE		
Unit values Totals		SEMBLY 25.50 \$459			0.00	FIXTURE 28.94 \$521
0011400000				MPS, SURFACE		
Unit values Totals	1.51	VITH REFLEC 79.00 \$158	41.50	0.00 \$0		FIXTURE 120.50 \$241

Line #	Descripti	on				
	Manhours	Matl	Labor	Equipment	Sub	Total
000	627	\$32,824	\$17,220	\$0	\$0	\$50,044
ESTIMATE TOTAL	627	\$32,824	\$17,220	\$0	\$0	\$50,044
SALES TAX MATL MARKUP LABOR MARKUP EQUIPT MARKUP SUB MARKUP	5.00% 0.00% 0.00% 0.00% 0.00%	\$1,641 \$0	\$0	\$0	\$0	
TOTAL BEFORE C CONTINGENCY BOND PROFIT	ONTINGENC 5.00% 5.00% 10.00%	\$34,465	\$17,220	\$0	\$0	\$51,685 \$2,584 \$2,584 \$5,169
JOB TOTAL						\$62,022

______ Estimate: LIGHTING UPGRADE Date: FEBRUARY 2, 1995
Description: LIGHTING PRODUCT UPGRADE
Project: HANGAR LIGHTING Bid Date: FEBRUARY 2, 1995
Location: BLDG 3262 Job #: 94013.04

Sq. footage: City indx:Raleigh, NC

SUMMARY

	-	01222112				
	Manhours	Matl	Labor	Equipment	Sub	Total
U00	627	\$32,824	\$17,220	\$0	\$0	\$50,044
TOTAL	627	\$32,824	\$17,220	\$0	\$0	\$50,044
SALES TAX MATL MARKUP LABOR MARKUP	5.00% 0.00% 0.00%	\$1,641 \$0	\$0			
EQUIPT MARKUP	0.00% 0.00%			\$0	\$0	
TOTAL BEFORE CONTINGENCY BOND PROFIT	CONTINGENC 5.00% 5.00% 10.00%	\$34,465	\$17,220	\$0	\$0	\$51,685 \$2,584 \$2,584 \$5,169
JOB TOTAL						\$62,022

Estimate: BLDG 3262 Date: FEBRUARY 2, 1995
Description: CONVENTIONAL SKYLIGHT & CONTROLS

Project: HANGAR STUDY Bid Date: FEBRUARY 2, 1995
Location: BLDG 3262 Job #: 94013.04
Sq. footage: City indx:Raleigh, NC Sq. footage:

Line	#	Description
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		Manhours	Matl	Labor E	Equipment	Sub	Total
=	:=============						
0	060000001	CONVENTION (DOUBLE PA		HT WITH 4'	' INSULATED	CURBS	SO. FT
	Init values Potals	0.00	19.56 \$12,910	2.41 \$1,591	0.09 \$59	0.00	22.06 \$14,560
U	100	0	\$12,910	\$1,591	\$59	\$0	\$14,560

Line #	Description	on				
	Manhours	Matl	Labor	Equipment	Sub	Total
1611350023	LOW VOLTAG	GE WIRE #1	18-4C		14.00	CLF
Unit values Totals	1.23 17.22	15.40 \$216	34.00 \$476	0.00 \$0	0.00 \$0	49.40 \$692
1611750101	LIGHTING (CONTACTOR			6.00	Eλ
Unit values Totals	2.00 12.00	137.00 \$822	55.00 \$330	0.00 \$0	0.00	192.00 \$1,152
1611850101	PHOTO SWIT	rch 50-500	FC ADJU	STABLE	4 00	773
Unit values Totals	1.00 4.00	290.00 \$1,160	27.50 \$110	0.00 \$0	4.00 0.00 \$0	317.50 \$1,270
1611870101	LOW VOLTA	GE TRANS 1	15V-24V			73
Unit values Totals	0.67 0.67	64.00 \$64	18.35 \$18	0.00 \$0	1.00 0.00 \$0	82.35 \$82
1611870102	SWITCHING	RELAYS			0.00	73
Unit values Totals	0.50 4.00	11.30 \$90	13.75 \$110	0.00	8.00 0.00 \$0	25.05 \$200
1611950101	1/2" EMT				500.00	* **
Unit values Totals	0.05 25.00	0.38 \$190	1.29 \$645	0.00 \$0	500.00 0.00 \$0	1.67 \$835
U16 ELECTRICAL	63	\$2,542	\$1,689	\$0	\$0	\$4,231

JOB TOTAL

\$23,476

Description Manhours Matl Labor Equipment Sub 63 \$15,452 \$3,280 \$59 \$0 \$18,791 ESTIMATE TOTAL \$773 SALES TAX 5.00% MATL MARKUP 0.00% \$0 0.00% \$0 LABOR MARKUP EQUIPT MARKUP 0.00% \$0 \$0 SUB MARKUP 0.00% TOTAL BEFORE CONTINGENC \$16,225 \$3,280 \$59 \$0 \$19,564 \$978 CONTINGENCY 5.00% \$978 5.00% BOND 10.00% \$1,956 PROFIT

Estimate: BLDG 3262 Date: FEBRUARY 2, 1995
Description: CONVENTIONAL SKYLIGHT & CONTROLS
Project: HANGAR STUDY Bid Date: FEBRUARY 2, 1995
Location: BLDG 3262 Job #: 94013.04
Sq. footage: City indx:Raleigh, NC

	S	UMMARY			=======	=======
	Manhours	Matl	Labor	Equipment	Sub	Total
						=======
U00 U16 ELECTRICAL	0 63	\$12,910 \$2,542	\$1,591 \$1,689	\$59 \$0	\$0 \$0	\$14,560 \$4,231
TOTAL	63	\$15,452	\$3,280	\$59	\$0	\$18,791
SALES TAX MATL MARKUP LABOR MARKUP	5.00% 0.00% 0.00%	\$773 \$0	\$0			
EQUIPT MARKUP SUB MARKUP	0.00% 0.00%		·	\$0	\$0	
TOTAL BEFORE CO CONTINGENCY BOND PROFIT	ONTINGENC 5.00% 5.00% 10.00%	\$16,225	\$3,280	\$59	\$0	\$19,564 \$978 \$978 \$1,956
JOB TOTAL						\$23,476

LIFE CYCLE COST ANALYSIS SUMMARY STUDY: 3354
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID FY95 (92) INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3 PROJECT NO. & TITLE: 3354 SKY LIGHTS & LIGHTING PRODUCTS @ HANGARS FISCAL YEAR 95 DISCRETE PORTION NAME: LIGHTING ANALYSIS DATE: 02-03-95 ECONOMIC LIFE 10 YEARS PREPARED BY: JAH 1. INVESTMENT A. CONSTRUCTION COST \$ 38572. B. SIOH C. DESIGN COST 1929. 1929. D. TOTAL COST (1A+1B+1C) \$ 42429. E. SALVAGE VALUE OF EXISTING EQUIPMENT \$ 0. F. PUBLIC UTILITY COMPANY REBATE G. TOTAL INVESTMENT (1D - 1E - 1F) 42429. 2. ENERGY SAVINGS (+) / COST (-) DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993 UNIT COST SAVINGS ANNUAL \$ DISCOUNTED \$/ MWH(1) MWH/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5) FUEL A. ELECT \$ 34.95 2996. 86. 8.77 26277. B. DIST \$.00 0. 0. 9.26 0. C. RESID \$ 10.08 .00 0. 0. 0. \$ 0. \$ 0. \$ 0. \$ 4198. \$ 7194. .00 0. 0. D. NAT G \$ 10.39 0. .00 0. E. COAL \$ 9.39 0. F. LPG \$ 8.78 .00 35641. 8.49 M. DEMAND SAVINGS 86. N. TOTAL 61918. 3. NON ENERGY SAVINGS(+) / COST(-) \$ 849. A. ANNUAL RECURRING (+/-) (1) DISCOUNT FACTOR (TABLE A) 8.49 (2) DISCOUNTED SAVING/COST (3A X 3A1) \$ 7208. B. NON RECURRING SAVINGS(+) / COSTS(-) SAVINGS(+) YR DISCNT
COST(-) OC FACTR
(1) (2) (3) DISCOUNTED SAVINGS(+)/ ITEM COST(-)(4)d. TOTAL \$ 0. C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)\$ 7208. 4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))\$ 5. SIMPLE PAYBACK PERIOD (1G/4) 5.28 YEARS \$ 69126. 6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) 7. SAVINGS TO INVESTMENT RATIO (SIR) = (6 / 1G) =1.63 (IF < 1 PROJECT DOES NOT QUALIFY) 8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): 8.26 %

FORT BRAGG LIMITED ENERGY STUDY OF HANGAR FACILITIES AT SIMMONS ARMY AIRFIELD ECO 1: INTERIOR LIGHTING 18 DECEMBER 1934 AREA USE. HOURSIDAY DAYSWEEK AREA USE. LAMP U Q 92 WIFIXT = 0 WATTS 131 2 LAMP Q 137 WIFIXT = 0 WATTS REDIACEMENT FIXTURE DATA 4 LAMP Q 144 WIFIXT = 0 WATTS B FOOT 25 2 LAMP Q 144 WIFIXT = 0 WATTS B FOOT 8 FOOT 8 FOOT 8 FOOT 8 A SELINE DEMAND 15.65 KW ECO DEMAND	RAGG LIMITED ENERGY CILITIES AT SIMMONS ECO 1: INTERIOR / EXTERIOR LIGHTING 16 DECEMBER 1994 RLIGHTING: FLUORESCENT FIXTURE REPLA ELECTRIC COSTS: ENERGY CHARGE DEMAND CHARGE DEMAND CHARGE DEMAND CHARGE 2 FOOT A FOOT WATTS WATTS WATTS WATTS 4 FOOT A LAMP R	FORT BRAGG LIMITED ENERGY STUDY IGAR FACILITIES AT SIMMONS ARMY AI ECO 1: INTERIOR / EXTERIOR LIGHTING 16 DECEMBER 1994 INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT AR ELECTRIC COSTS: ENERGY CHARGE 16 DECEMBER 1994 ENT = 0 WATTS FIXT = 12,052 WATTS FIXT = 12,052 WATTS FIXT = 0 WATTS F	FUDY WY AIRFIELE \$0.03495 PER KWH \$9.25 PER KW DATA S8 W/FIXT = S8 W/FIXT = 125 W/FIXT = 125 W/FIXT = 7710N	0 WATTS 7,598 WATTS 0 WATTS 0 WATTS 3,125 WATTS 27,880 KWHYR 10.72 KW
NET ENERGY SAVINGS 12,	12,815 KWH/YR	NET DEMAND SAVINGS NET DOLLAR SAVINGS	VINGS	\$547 MR \$995 MR
MA 0 LAMPS @ \$5.00 / 20,000 HOURS *	MAINTENANCE SAVINGS	SAVINGS HR/YR = \$0 / YEAR	R (4' FLUORESCENT LAMPS)	ENT LAMPS)
•	5			· · · · · · · · · · · · · · · · · · ·

\$0 NEAR

NET MAINTENANCE SAVINGS

2,111 KWH/YR 0 WATTS 0 WATTS 0 WATTS 812 WATTS 0.81 KW \$143 MR \$260 MR (INCANDESCENT) (FLUORESCENT) 14 2 LAMP @ 58 W/FIXT = (FOUR FOOT FLUORESCENT FIXTURES) OF HANGAR FACILITIES AT SIMMONS ARMY AIRFIELD PER KWH PER KW 450 WATTS = WATTS = WATTS = **NET DEMAND SAVINGS NET DOLLAR SAVINGS** \$0.03495 FORT BRAGG LIMITED ENERGY STUDY \$340 / YEAR \$18 / YEAR REPLACEMENT FIXTURE DATA ECO ENERGY CONSUMPTION ELECTRIC COSTS: ENERGY CHARGE DEMAND CHARGE MH @ MH @ HPS @ INTERIOR LIGHTING: LIGHTING REPLACEMENT **ECO 1: INTERIOR / EXTERIOR LIGHTING** \$322 NEAR ECO DEMAND MAINTENANCE SAVINGS 000 2,600 HR/YR = 2,600 HR/YR = **16 DECEMBER 1994** 5,460 KWH/YR 3,349 KWH/YR ş **NET MAINTENANCE SAVINGS** 2.10 \$3.50 /750 HOURS * \$5.00 / 20,000 HOURS * 0 WATTS 0 WATTS 0 WATTS 0 WATTS 2,100 WATTS 10 5 1 (1-YES, 0-NO) WATTS = WATTS = WATTS = WATTS = WATTS = BUILDING #: 3354 - HANGAR BASELINE ENERGY CONSUMPTION **NET ENERGY SAVINGS** 28 LAMPS @ 28 LAMPS @ 22 EXISTING FIXTURE DATA INCAND @ QUARTZ @ QUARTZ @ AREA USE: HOURS/DAY BASELINE DEMAND DAYSWEEK PEAK USE 28

702 KWHIYR 270 WATTS 0 WATTS 0 WATTS 0 WATTS (INCANDESCENT) (COMPACT FLUORESCENT) Ž \$95 MR \$173 MR 0.27 OF HANGAR FACILITIES AT SIMMONS ARMY AIRFIELD PER KWH PER KW 13 W/FIXT = 13 W/FIXT = 18 W/FIXT = 26 W/F COMPACT FLUORESCENT REPLACEMENT NET DEMAND SAVINGS NET DOLLAR SAVINGS FORT BRAGG LIMITED ENERGY STUDY \$0.03495 \$182 / YEAR \$8 / YEAR ECO ENERGY CONSUMPTION INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT 0 LAMPS @ 15 LAMPS @ 0 LAMPS @ 0 LAMPS @ 0 LAMPS @ LAMPS @ 0 LAMPS ELECTRIC COSTS: ENERGY CHARGE DEMAND CHARGE ECO 1: INTERIOR / EXTERIOR LIGHTING 16 DECEMBER 1994 \$174 N'EAR ECO DEMAND MAINTENANCE SAVINGS 2,600 HR/YR = 2,600 HR/YR = 2,925 KWH/YR 2,223 KWH/YR ž **NET MAINTENANCE SAVINGS** \$3.50 / 750 HOURS * 0 WATTS 1,125 WATTS 0 WATTS 0 WATTS 10 5 1 (1-YES, 0-NO) 52 W/FIXT = 60 W/FIXT = 75 W/FIXT = 90 W/FIXT = 100 W/FIX BUILDING #: 3354 - HANGAR BASELINE ENERGY CONSUMPTION **NET ENERGY SAVINGS** 15 LAMPS @ 15 LAMPS @ EXISTING INCANDESCENTS BASELINE DEMAND DAYSWEEK PEAK USE LAMPS @ LAMPS @ LAMPS @ LAMPS @ LAMPS @ AREA USE: HOURS/DAY

44,895 KWH/YR ₹ \$3,413 MR \$5,767 MR WITHOUT SKYLIGHTS) (WITH SKYLIGHTS) (WITH SKYLIGHTS) (WITHOUT SKYLIGHTS) 30.75 OF HANGAR FACILITIES AT SIMMONS ARMY AIRFIELD PER KWH PER KW **NET DEMAND SAVINGS NET DOLLAR SAVINGS** \$0.03495 1,460 FORT BRAGG LIMITED ENERGY STUDY \$237 / YEAR \$352 / YEAR \$95 / YEAR \$141 / YEAR ECO ENERGY CONSUMPTION REVISED USAGE: HOURS/YEAR ELECTRIC_COSTS: ENERGY CHARGE DEMAND CHARGE ECO 1: INTERIOR / EXTERIOR LIGHTING 02 FEBRUARY 1995 \$353 MEAR CONVENTIONAL SKY LIGHTS IN HANGARS **ECO DEMAND** MAINTENANCE SAVINGS 3,650 HR/YR = 3,650 HR/YR = 1,460 HR/YR = 1,460 HR/YR = 67,343 KWH/YR 112,238 KWH/YR ₹ **NET MAINTENANCE SAVINGS** \$38.00 / 24,000 HOURS * \$47.00 / 20,000 HOURS * \$38.00 / 24,000 HOURS * \$47.00 / 20,000 HOURS * \$47.00 30.75 1 (1-YES, 0-NO) 30,750 W 3,650 BUILDING #: 3354 - HANGAR **NET ENERGY SAVINGS** BASELINE ENERGY CONSUMPTION 41 LAMPS @ 41 LAMPS @ 41 LAMPS @ 41 LAMPS @ CURRENT USAGE: HOURS/YEAR BASELINE DEMAND

FEBRUARY 2, 1995 LIGHTING UPGRADE Date: LIGHTING PRODUCT UPGRADE Description: Bid Date: FEBRUARY 2, 1995 HANGAR LIGHTING Project: 94013.04 Job #: **BLDG 3354** Location: City indx:Raleigh, NC Sq. footage: Description Line # Sub Equipment Labor Matl Manhours DEMOLITION, INCANDESCENT FIXTURES/EXIT SIGNS 0002010000 43.00 FIXTURE 0.00 0.00 7.10 0.00 7.10 0.26 Unit values \$0 \$305 \$0 \$0 \$305 Totals 11.18 DEMOLITION, 1X4 FLUORESCENT FIXTURES 0002020000 170.00 FIXTURE 0.00 0.00 13.35 0.00 13.35 0.49 Unit values \$0 \$0 \$2,270 \$0 \$2,270 Totals 83.30 1X4 2-32 WATT FLUORESCENT LAMPS, SURFACE 0010000000 14.00 FIXTURE MOUNTED 0.00 31.50 0.00 91.50 60.00 1.14 Unit values \$441 \$0 \$0 \$1,281 15.96 \$840 Totals 1X4 2-32 WATT FLUORESCENT LAMPS, PENDANT 0010400000 131.00 FIXTURE MOUNTED 70.50 0.00 0.00 39.00 31.50 1.14 Unit values \$0 \$0 \$9,236 \$4,127 149.34 \$5,109 Totals 1X8 2-59 WATT FLUORESCENT LAMPS, PENDANT 0010600000 25.00 FIXTURE MOUNTED 0.00 131.00 48.12 0.00 179.12 1.75 Unit values \$1,203 \$0 \$0 \$4,478 \$3,275 43.75 Totals 18 WATT COMPACT FLUORESCENT FIXTURE 0011200000 15.00 FIXTURE GLOBE ASSEMBLY 0.00 0.00 28.94 Unit values 0.13 25.50 3.44 \$4.35 \$0 \$0 Totals 1.95 \$383 \$52 \$18,005 \$0 \$0 \$8,398 306 \$9,607 UOO

Description Manhours Matl Labor Equipment Sub Total \$0 \$0 \$9,607 \$8,398 \$18,005 306 ESTIMATE TOTAL \$480 5.00% SALES TAX \$0 0.00% MATL MARKUP \$0 0.00% LABOR MARKUP \$0 EQUIPT MARKUP 0.00% \$0 SÜB MARKUP 0.00% \$0 \$18,485 \$10,087 \$8,398 \$0 TOTAL BEFORE CONTINGENC \$924 5.00% CONTINGENCY \$924 \$1,849 5.00% BOND 10.00% PROFIT \$22,182 JOB TOTAL

Estimate: LIGHTING UPGRADE Date: FEBRUARY 2, 1995
Description: LIGHTING PRODUCT UPGRADE
Project: HANGAR LIGHTING Bid Date: FEBRUARY 2, 1995
Location: BLDG 3354 Job #: 94013.04
City indx:Raleigh, NC

	Si	UMMARY				
	Manhours	Matl	Labor	Equipment	Sub	Total
=========	========	======	=======	==========		

	Manhours	Matl	Labor	Equipment	Sub	Total
	=======					
000	306	\$9,607	\$8,398	\$0	\$0	\$18,005
TOTAL	306	\$9,607	\$8,398	\$0	\$0	\$18,005
SALES TAX MATL MARKUP LABOR MARKUP EQUIPT MARKUP	5.00% 0.00% 0.00% 0.00%	\$480 \$0	\$0	\$0		
SUB MARKUP	0.00%				\$0	
TOTAL BEFORE CONTINGENCY BOND PROFIT	CONTINGENC 5.00% 5.00% 10.00%	\$10,087	\$8,398	\$0	\$0	\$18,485 \$924 \$924 \$1,849
JOB TOTAL						\$22,182

Estimate: BLDG 3354 Date: FEBRUARY 2, 1995
Description: CONVENTIONAL SKYLIGHT & CONTROLS
Project: HANGAR STUDY Bid Date: FEBRUARY 2, 1995
Location: BLDG 3354 Job #: 94013.04
Sq. footage: City indx:Raleigh, NC

Line # Description

Manhours Matl Labor Equipment Sub Total

0060000001			HT WITH 4"	INSULATED	CURBS	
	(DOUBLE P.	ANED)			450.00	SQ. FT
Unit values	0.00	19.56	2.41	0.09	0.00	22.06
Totals	0.00	\$8,802	\$1,085	\$41	\$0	\$9,928

U00	0	\$8,802	\$1,085	\$41	\$0	\$9,928

=======================================	========		=======	========		=======
Line #	Descripti	on				
	Manhours	Matl	Labor	Equipment	Sub	Total
				=======		
1611350023	LOW VOLTA	GE WIRE #	18-4C			
Unit values Totals	1.23 12.30	15.40 \$154	34.00 \$340	0.00	10.00 0.00 \$0	CLF 49.40 \$494
1611750101	LIGHTING	CONTACTOR				
Unit values Totals	2.00	137.00 \$411	55.00 \$165	0.00 \$0	3.00 0.00 \$0	EA. 192.00 \$576
1611850101	PHOTO SWI	TCH 50-500	FC ADJUS	STABLE		
Unit values Totals	1.00 4.00	290.00 \$1,160	27.50 \$110	0.00 \$0	4.00 0.00 \$0	EA. 317.50 \$1,270
1611870101	LOW VOLTA	GE TRANS 1	l15V-24V			
Unit values Totals	0.67 0.67	64.00 \$64	18.35 \$18	0.00	1.00 0.00 \$0	EA. 82.35 \$82
1611870102	SWITCHING	RELAYS				
Unit values Totals	0.50 4.00	11.30 \$90	13.75 \$110	0.00 \$0	8.00 0.00 \$0	EA. 25.05 \$200
1611950101	1/2" EMT					
Unit values Totals	0.05 17.00	0.38 \$129	1.29 \$439	0.00	340.00 0.00 \$0	LF 1.67 \$568
U16 ELECTRICAL	44	\$2,008	\$1,182	\$0	\$0	\$3,190

=======================================	=======		=======	==========	=======	=======
Line #	Descripti	ion				
=======================================	Manhours	Matl	Labor	Equipment	Sub	Total
					======================================	=======
ESTIMATE TOTAL	44	\$10,810	\$2,267	\$41	\$0	\$13,118
SALES TAX MATL MARKUP LABOR MARKUP	5.00% 0.00%	\$541 \$0			,	¥13,110
EQUIPT MARKUP SUB MARKUP	0.00% 0.00% 0.00%		\$0	\$0	\$0	
CONTINGENCY BOND PROFIT	0NTINGENC 5.00% 5.00% 10.00%	\$11,351	\$2,267	\$41	\$0	\$13,659 \$683 \$683 \$1,366
JOB TOTAL						\$16,390

Estimate: BLDG 3354 Date: FEBRUARY 2, 1995
Description: CONVENTIONAL SKYLIGHT & CONTROLS
Project: HANGAR STUDY Bid Date: FEBRUARY 2, 1995
Location: BLDG 3354 Job #: 94013.04
Sq. footage: City indx:Raleigh, NC Sq. footage:

SUMMARY							
Manhours	Matl	Labor					

	Manhours	Matl	Labor	Equipment	Sub	Total
=======================================					=======================================	
U00 U16 ELECTRICAL	0 44	\$8,802 \$2,008	\$1,085 \$1,182	\$41 \$0	\$0 \$0	\$9,928 \$3,190
TOTAL	44	\$10,810	\$2,267	\$41	\$0	\$13,118
SALES TAX MATL MARKUP LABOR MARKUP EQUIPT MARKUP	5.00% 0.00% 0.00% 0.00%	\$541 \$0	\$0	\$0		
SUB MARKUP	0.00%			γo	\$0	
TOTAL BEFORE COCONTINGENCY BOND PROFIT	ONTINGENC 5.00% 5.00% 10.00%	\$11,351	\$2,267	\$41	\$0	\$13,659 \$683 \$683 \$1,366
JOB TOTAL						\$16,390

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LIFE CYCLE COST ANALYSIS SUMMARY STUDY: 3637
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID FY95 (92)
INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 3637 SKY LIGHTS & LIGHTING PRODUCTS @ HANGARS
FISCAL YEAR 95 DISCRETE PORTION NAME: LIGHTING
ANALYSIS DATE: 02-03-95 ECONOMIC LIFE 10 YEARS PREPARED BY: JAH
1. INVESTMENT
A. CONSTRUCTION COST $ 37974.
B. SIOH
C. DESIGN COST
$
                                      1899.
1899.
C. DESIGN COST $ 1899.
D. TOTAL COST (1A+1B+1C) $ 41771.
E. SALVAGE VALUE OF EXISTING EQUIPMENT $
F. PUBLIC UTILITY COMPANY REBATE
                                                                       41771.
G. TOTAL INVESTMENT (1D - 1E - 1F)
2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993
                UNIT COST SAVINGS ANNUAL $ DISCOUNT DISCOUNTED $/ MWH(1) MWH/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5)
     FUEL

      278.
      $ 9701.
      8.77

      0.
      $ 0.
      9.26

      0.
      $ 0.
      10.08

      0.
      $ 0.
      10.39

      0.
      $ 0.
      9.39

      0.
      $ 0.
      8.78

      $ 6075.
      8.49

      278.
      $ 15776.

                                                                                     85074.
     A. ELECT $ 34.95
                                                                                     0.
     B. DIST $ .00
                                                                                          0.
     C. RESID $ .00
D. NAT G $ .00
                                                                                         0.
                                                                                         0.
     E. COAL $ .00
F. LPG $ .00
                                                                                          0.
                                                                                    51577.
     M. DEMAND SAVINGS
                                                                                    136651.
     N. TOTAL
3. NON ENERGY SAVINGS(+) / COST(-)
                                                                                      769.
    A. ANNUAL RECURRING (+/-)
         (1) DISCOUNT FACTOR (TABLE A)
                                                                  8.49
         (2) DISCOUNTED SAVING/COST (3A X 3A1)
                                                                                    6529.
    B. NON RECURRING SAVINGS(+) / COSTS(-)
                                    SAVINGS(+) YR DISCNT DISCOUNTED

COST(-) OC FACTR SAVINGS(+),

(1) (2) (3) COST(-)(4)
                                                                       SAVINGS(+)/
                   ITEM
                                    $ 0.
    d. TOTAL
    C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)$ 6529.
 4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))$ 16545.
                                                                                   2.52 YEARS
 5. SIMPLE PAYBACK PERIOD (1G/4)
                                                                          $ 143179.
 6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C)
 7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)=
                                                                                 3.43
     (IF < 1 PROJECT DOES NOT QUALIFY)
                                                                          16.62 %
 8. ADJUSTED INTERNAL RATE OF RETURN (AIRR):
```

				0 WATTS	5,336 WATTS 0 WATTS 0 WATTS	0 WATTS	34,961 KWH/YR	5.34 KW	\$347 /YR \$1,063 /YR	
FORT BRAGG LIMITED ENERGY STUDY OF HANGAR FACILITIES AT SIMMONS ARMY AIRFIELD ECO 1: INTERIOR / EXTERIOR LIGHTING 16 DECEMBER 1994	XTURE REPLACEMENT	ELECTRIC COSTS: \$0.03495 PER KWH ENERGY CHARGE \$0.03495 PER KWH DEMAND CHARGE \$9.25 PER KW	REPLACEMENT FIXTURE DATA	2 FOOT 0 2 LAMP U @ 58 W/FIXT =	4 FOOT 92 2 LAMP @ 58 W/FIXT = 0 3 LAMP @ 87 W/FIXT = 0 4 LAMP @ 118 W/FIXT =	8 FOOT 0.2 LAMP @ 125 W/FIXT =	ECO ENERGY CONSUMPTION	ECO DEMAND	NET DEMAND SAVINGS NET DOLLAR SAVINGS	AVINGS
ORT BRAGG LIMITED ENERGY STUDY ARE FACILITIES AT SIMMONS ARMY AI ECO 1: INTERIOR / EXTERIOR LIGHTING 16 DECEMBER 1994	INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT	ELF EN	RE	2 F	8,464 WATTS 0 WATTS 0 WATTS	8 F 0 WATTS	55,456 KWH/YR EC	8.46 KW EC	20,495 KWHIYR	MAINTENANCE SAVINGS
FOR OF HANGAR		BUILDING #: 3637 - HANGAR AREA USE: HOURS/DAY DAYS/WEEK	EXISTING FIXTURE DATA	2 FOOT 2 LAMP U @ 92 W/FIXT =	4 FOOT 92 2 LAMP @ 92 W/FIXT = 3 LAMP @ 137 W/FIXT = 4 LAMP @ 184 W/FIXT =	8 FOOT 2 LAMP @ 144 W/FIXT =	BASELINE ENERGY CONSUMPTION	BASELINE DEMAND	NET ENERGY SAVINGS	

(4' FLUORESCENT LAMPS)

\$0 / YEAR

HR/YR =

\$0 NEAR

NET MAINTENANCE SAVINGS

\$5.00 / 20,000 HOURS *

LAMPS @_

FORT BRAGG LIMITED ENERGY STUDY OF HANGAR FACILITIES AT SIMMONS ARMY AIRFIELD ECO 1: INTERIOR / EXTERIOR LIGHTING 16 DECEMBER 1994	INTERIOR LIGHTING: LIGHTING REPLACEMENT	BUILDING #: 3637 - HANGAR ELECTRIC COSTS: \$0.03495 PER KWH AREA USE: 18 DEMAND CHARGE \$9.25 PER KW DAYS/WEEK 7 1 (1-YES, 0-NO) 1 (1-YES, 0-NO)	EXISTING FIXTURE DATA	INCAND @ WATTS = 0 WATTS 0 W	BASELINE ENERGY CONSUMPTION 338,083 KWHYR ECO ENERGY CONSUMPTION 141,523 KWHYR	INE DEMAND 51.60 KW ECO DEMAND 21.60 KW	NET ENERGY SAVINGS 196,560 KWH/YR NET DEMAND SAVINGS \$3,330 /YR NET DOLLAR SAVINGS \$10,200 /YR	MAINTENANCE SAVINGS	48 LAMPS @ \$70.00 / 24,000 HOURS • 6,570 HR/YR = \$920 / YEAR (MERCURY VAPOR) 48 LAMPS @ \$47.00 / 20,000 HOURS • 6,570 HR/YR = \$741 / YEAR (METAL HALIDE)	NET MAINTENANCE SAVINGS \$179 MEAR
		BUILDIN AREA L HOURS/C DAYS/WE PEAK U	EXISTING FIXT	DUAN QUAN QUAN 48 MV @ MV @	BASELINE ENE	BASELINE DEMAND	NET			

1,179 KWH/YR 0 WATTS 0 WATTS 0 WATTS 0 WATTS 180 WATTS (INCANDESCENT) (COMPACT FLUORESCENT) Ž \$0 MR \$63 MR 0.18 OF HANGAR FACILITIES AT SIMMONS ARMY AIRFIELD PER KWH PER KW 13 W/FIXT = 13 W/FIXT = 18 W/FIXT = 26 W/F COMPACT FLUORESCENT REPLACEMENT **NET DEMAND SAVINGS NET DOLLAR SAVINGS** FORT BRAGG LIMITED ENERGY STUDY \$0.03495 \$307 / YEAR \$13 / YEAR ECO ENERGY CONSUMPTION INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT LAMPS@ LAMPS@ LAMPS@ LAMPS@ ELECTRIC COSTS: ENERGY CHARGE DEMAND CHARGE **ECO 1: INTERIOR / EXTERIOR LIGHTING** \$294 NEAR ECO DEMAND MAINTENANCE SAVINGS 00000 6,570 HRYR = 6,570 HRYR = 16 DECEMBER 1994 1,914 KWH/YR 3,735 KWH/YR Š **NET MAINTENANCE SAVINGS** 0.75 \$3.50 / 750 HOURS * \$2.00 / 10,000 HOURS * 0 WATTS 750 WATTS 0 WATTS 0 WATTS 0 1 (1-YES, 0-NO) 52 W/FIXT = 60 W/FIXT = 75 W/FIXT = 90 W/FIXT = 100 W/FIX 3637 - HANGAR BASELINE ENERGY CONSUMPTION **NET ENERGY SAVINGS** 10 LAMPS @ <u>φ</u> 1 **EXISTING INCANDESCENTS** BASELINE DEMAND LAMPS @ LAMPS @ LAMPS @ LAMPS @ LAMPS @ AREA USE: HOURS/DAY BUILDING #: DAYS/WEEK PEAK USE 10

85,147 KWH/YR \$2,398 MR \$4,382 MR 21.6 KW (WITHOUT SKYLIGHTS) (WITH SKYLIGHTS) OF HANGAR FACILITIES AT SIMMONS ARMY AIRFIELD PER KWH PER KW NET DEMAND SAVINGS NET DOLLAR SAVINGS \$0.03495 FORT BRAGG LIMITED ENERGY STUDY 3,942 \$741 / YEAR \$445 / YEAR ECO ENERGY CONSUMPTION REVISED USAGE: HOURS/YEAR ELECTRIC COSTS: ENERGY CHARGE DEMAND CHARGE ECO 1: INTERIOR / EXTERIOR LIGHTING 02 FEBRUARY 1995 CONVENTIONAL SKY LIGHTS IN HANGARS \$296 NEAR **ECO DEMAND** MAINTENANCE SAVINGS 6,570 HR/YR = 3,942 HR/YR = 141,912 KWH/YR 56,765 KWH/YR 21.6 KW **NET MAINTENANCE SAVINGS** \$47.00 / 20,000 HOURS • \$47.00 / 20,000 HOURS • 1 (1-YES, 0-NO) 21,600 W 6,570 BUILDING #: 3637 - HANGAR BASELINE ENERGY CONSUMPTION **NET ENERGY SAVINGS** 48 LAMPS @ WATTAGE CONTROLLED: PEAK_USE: CURRENT USAGE: HOURS/YEAR BASELINE DEMAND

UOO

298

\$13,779

\$8,191

\$0

\$0

\$21,970

______ FEBRUARY 2, 1995 LIGHTING UPGRADE Date: Estimate: LIGHTING PRODUCT UPGRADE Description: Bid Date: FEBRUARY 2, 1995 HANGAR LIGHTING Project: Job #: 94013.04 BLDG 3637 Location: City indx: Raleigh, NC Sq. footage: Description Line # Labor Equipment Sub Matl Manhours ______ DEMOLITION, INCANDESCENT FIXTURES/EXIT SIGNS 0002010000 10.00 FIXTURE 0.00 7.10 0.00 0.00 Unit values 0.26 7.10 \$71 \$0 \$0 \$0 \$71 Totals 2.60 0002020000 DEMOLITION, 1X4 FLUORESCENT FIXTURES 92.00 FIXTURE 0.00 0.00 Unit values 0.49 0.00 13.35 13.35 \$1,228 \$0 \$0 \$1,228 Totals 45.08 \$0 DEMOLITION, HIGH BAY FIXTURES 0002030000 48.00 FIXTURE 0.00 Unit values 1.00 0.00 27.50 0.00 27.50 \$0 \$0 Totals 48.00 \$0 \$1,320 \$1,320 1X4 2-32 WATT FLUORESCENT LAMPS, PENDANT 0010400000 92.00 FIXTURE MOUNTED 39.00 0.00 0.00 31.50 70.50 Unit values 1.14 \$0 \$0 \$3,588 \$2,898 \$6,486 Totals 104.88 0011000000 400 WATT METAL HALIDE FIXTURE 48.00 FIXTURE 0.00 Unit values 2.00 207.00 55.00 0.00 262.00 \$0 \$0 Totals 96.00 \$9,936 \$2,640 \$12,576 18 WATT COMPACT FLUORESCENT FIXTURE 0011200000 10.00 FIXTURE GLOBE ASSEMBLY Unit values 0.13 25.50 3.44 0.00 0.00 28.94 \$255 Totals 1.30 \$34 \$0 \$0 \$289

Line # Description

Line #	Description							
	Manhours	Matl	Labor	Equipment	Sub	Total		
ESTIMATE TOTAL	298	\$13,779	\$8,191	\$0	\$0	\$21,970		
SALES TAX MATL MARKUP	5.00% 0.00% 0.00%	\$689 \$0	\$0					
LABOR MARKUP EQUIPT MARKUP SUB MARKUP	0.00%		ŞΟ	\$0	\$0			
TOTAL BEFORE C CONTINGENCY BOND PROFIT	ONTINGENC 5.00% 5.00% 10.00%	\$14,468	\$8,191	\$0	\$0	\$22,659 \$1,133 \$1,133 \$2,266		
JOB TOTAL						\$27,191		

Estimate: LIGHTING UPGRADE Date: FEBRUARY 2, 1995
Description: LIGHTING PRODUCT UPGRADE
Project: HANGAR LIGHTING Bid Date: FEBRUARY 2, 1995
Location: BLDG 3637 Job #: 94013.04

Sq. footage:

Job #: 94013.04 City indx:Raleigh, NC

CIMMARV

	S					
	Manhours	Matl	Labor	Equipment	Sub	Total
noo	298	\$13,779	\$8,191	\$0	\$0	\$21,970
TOTAL	298	\$13,779	\$8,191	\$0	\$0	\$21,970
SALES TAX MATL MARKUP LABOR MARKUP	5.00% 0.00% 0.00%	\$689 \$0	\$0			
EQUIPT MARKUP SUB MARKUP	0.00% 0.00%			\$0	\$0	
TOTAL BEFORE CONTINGENCY BOND PROFIT	ONTINGENC 5.00% 5.00% 10.00%	\$14,468	\$8,191	\$0	\$0	\$22,659 \$1,133 \$1,133 \$2,266
JOB TOTAL						\$27,191

=======================================		======				
Estimate: Description: Project: Location: Sq. footage:	BLDG 3637 CONVENTIO HANGAR ST BLDG 3637	NAL SKYLI UDY	Bid Date: Job #:	FEBRUARY 2, FROLS FEBRUARY 2, 94013.04 :Raleigh, NC	1995	
Line #	Description	on			======	=======
=======================================	Manhours	Matl	Labor	Equipment	Sub	Total
0060000001 Unit values Totals	(DOORTE DE	NAL SKYLIC NED) 19.56 \$5,868	GHT WITH 4 2.41 \$723	" INSULATED 0.09 \$27	CURBS 300.00 0.00 \$0	22.06
U00	0	\$5,868	\$723	\$27	\$0	\$6,618

=======================================	=========	=========	=======	========	=======	
Line #	Descripti	on				
=======================================	Manhours	Matl	Labor	Equipment	Sub	Total
				:		=======================================
1611350023	LOW VOLTA	GE WIRE #:	18-4C			
Unit values Totals	1.23 6.15	15.40 \$77	34.00 \$170	0.00 \$0	5.00 0.00 \$0	CLF 49.40 \$247
1611750101	LIGHTING	CONTACTOR			·	,
Unit values Totals	2.00 4.00	137.00 \$274	55.00 \$110	0.00 \$0	2.00 0.00 \$0	EA. 192.00 \$384
1611850101	PHOTO SWI	TCH 50-500	FC ADJUS	STABLE	•	7
Unit values Totals	1.00 2.00	290.00 \$580	27.50 \$55	0.00	2.00 : 0.00 \$0	EA. 317.50 \$635
1611870101	LOW VOLTA	GE TRANS 1	15V-24V		·	, , ,
Unit values Totals	0.67 0.67	64.00 \$64	18.35 \$18	0.00 \$0	1.00 I 0.00 \$0	EA. 82.35 \$82
1611870102	SWITCHING	RELAYS				
Unit values Totals	0.50 2.00	11.30 \$45	13.75 \$55	0.00 \$0	4.00 E 0.00 \$0	25.05 \$100
1611950101	1/2" EMT				·	•
Unit values Totals	0.05 17.00	0.38 \$129	1.29 \$439	0.00 \$0	340.00 I 0.00 \$0	F 1.67 \$568
U16 ELECTRICAL	32	\$1,169	\$847	\$0	\$0	\$2,016

Line #	Description	on				
=======================================	Manhours	Matl	Labor	Equipment	Sub	Total
ESTIMATE TOTAL	32	\$7,037	\$1,570	\$27	\$0	\$8,634
SALES TAX MATL MARKUP LABOR MARKUP EQUIPT MARKUP SUB MARKUP	5.00% 0.00% 0.00% 0.00% 0.00%	\$352 \$0	\$0	\$0	\$0	
TOTAL BEFORE CO CONTINGENCY BOND PROFIT	ONTINGENC 5.00% 5.00% 10.00%	\$7,389	\$1,570	\$27	\$0	\$8,986 \$449 \$449 \$899
JOB TOTAL						\$10,783

Estimate: BLDG 3637 Date: FEBRUARY 2, 1995
Description: CONVENTIONAL SKYLIGHT & CONTROLS
Project: HANGAR STUDY Bid Date: FEBRUARY 2, 1995

Location:

BLDG 3637

94013.04

Job #: Sq. footage: City indx:Raleigh, NC

SII	MM/	RV
20	$I \coprod I \coprod$	71/7

	Manhours	Matl	Labor	Equipment	Sub	Total
				=========	=======	=======
U00 U16 ELECTRICAL	0 32	\$5,868 \$1,169	\$723 \$847	\$27 \$0	\$0 \$0	\$6,618 \$2,016
TOTAL	32	\$7,037	\$1,570	\$27	\$0	\$8,634
SALES TAX MATL MARKUP LABOR MARKUP	5.00% 0.00% 0.00%	\$352 \$0	\$0			
EQUIPT MARKUP SUB MARKUP	0.00% 0.00%			\$0	\$0	
TOTAL BEFORE CO CONTINGENCY BOND PROFIT	ONTINGENC 5.00% 5.00% 10.00%	\$7,389	\$1,570	\$27	\$0	\$8,986 \$449 \$449 \$899
JOB TOTAL						\$10,783

ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID FY95 (92) INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3 PROJECT NO. & TITLE: 3642 SKY LIGHTS & LIGHTING PRODUCTS @ HANGARS DISCRETE PORTION NAME: LIGHTING FISCAL YEAR 95 ANALYSIS DATE: 02-03-95 ECONOMIC LIFE 10 YEARS PREPARED BY: JAH 1. INVESTMENT 60635. A. CONSTRUCTION COST 3032. B. SIOH 3032. C. DESIGN COST D. TOTAL COST (1A+1B+1C) \$ E. SALVAGE VALUE OF EXISTING EQUIPMENT \$ F. PUBLIC UTILITY COMPANY REBATE 0. 66699. G. TOTAL INVESTMENT (1D - 1E - 1F) 2. ENERGY SAVINGS (+) / COST (-) DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993 UNIT COST SAVINGS ANNUAL \$ DISCOUNT DISCOUNTED MWH/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5) FUEL \$/ MWH(1) A. ELECT \$ 34.95 245. 8558. 8.77 75057. B. DIST \$.00 0. 0. 9.26 0. C. RESID \$.00 0. 0. 10.08 0. .00 0. 0. 10.39 D. NAT G \$ 0. E. COAL \$.00 0. 0. 9.39 0. F. LPG 0. 8.78 .00 Ο. 0. 10077. 8.49 M. DEMAND SAVINGS 85554. 18635. N. TOTAL 245. 160611. 3. NON ENERGY SAVINGS(+) / COST(-) A. ANNUAL RECURRING (+/-) \$ 5404. (1) DISCOUNT FACTOR (TABLE A) 8.49 (2) DISCOUNTED SAVING/COST (3A X 3A1) 45880. B. NON RECURRING SAVINGS(+) / COSTS(-) SAVINGS(+) YR DISCNT DISCOUNTED COST(-) OC FACTR SAVINGS(+)/ ITEM (1) (2) COST(-)(4)(3) d. TOTAL 0. 0. C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)\$ 45880. 4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))\$ 24039. 2.77 YEARS 5. SIMPLE PAYBACK PERIOD (1G/4) 6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) \$ 206491. 7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 3.10 (IF < 1 PROJECT DOES NOT QUALIFY) 8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): 15.43 %

LIFE CYCLE COST ANALYSIS SUMMARY

STUDY: 3642

11,672 KWHYR 116 WATTS 0 WATTS 0 WATTS 0 WATTS 3,625 WATTS 3.74 KW \$69 NR \$136 MR (4' FLUORESCENT LAMPS) OF HANGAR FACILITIES AT SIMMONS ARMY AIRFIELD PER KWH PER KW 58 W/FIXT = 87 W/FIXT = 118 W/FIXT = 58 W/FIXT = 125 W/FIXT = **NET DEMAND SAVINGS NET DOLLAR SAVINGS** FORT BRAGG LIMITED ENERGY STUDY \$0.03495 REPLACEMENT FIXTURE DATA \$0 / YEAR ECO ENERGY CONSUMPTION INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT 0 2 LAMP U @ 2 2 LAMP @ 0 3 LAMP @ 0 4 LAMP @ ECO 1: INTERIOR / EXTERIOR LIGHTING 16 DECEMBER 1994 ELECTRIC COSTS; ENERGY CHARGE DEMAND CHARGE 29 2 LAMP @ **ECO DEMAND** MAINTENANCE SAVINGS HRMR = **4 FOOT** 8 F00T 2 F001 13,603 KWH/YR 1,931 KWH/YR 4.36 KW / 20,000 HOURS • 184 WATTS 0 WATTS 0 WATTS 0 WATTS **4,176 WATTS** 92 W/FIXT = 137 W/FIXT = 184 W/FIXT = 92 W/FIXT = 144 W/FIXT = BUILDING #: 3642 - HANGAR BASELINE ENERGY CONSUMPTION **NET ENERGY SAVINGS** 5 5 LAMPS @ EXISTING FIXTURE DATA 2 LAMP U@ BASELINE DEMAND AREA USE:_ HOURS/DAY 2 2 LAMP @ 3 LAMP @ 4 LAMP @ DAYSWEEK 29 2 LAMP @ **4 FOOT 8 FOOT**

\$0 MEAR

NET MAINTENANCE SAVINGS

102,636 KWHYR 18,450 WATTS 12,300 WATTS 2,146 WATTS 0 WATTS (EXISTING INCANDESCENT) (EXISTING MERCURY VAPOR) (EXISTING INCANDESCENT) ₹ (HIGH PRESSURE SODIUM) \$6,297 MR \$12,483 MR 32.90 FLUORESCENT) (METAL HALIDE) OF HANGAR FACILITIES AT SIMMONS ARMY AIRFIELD 37 2 LAMP @ 58 W/FIXT = [FOUR FOOT FLUORESCENT FIXTURES] PER KWH PER KW 450 WATTS = 300 WATTS = WATTS = **NET DEMAND SAVINGS NET DOLLAR SAVINGS** FORT BRAGG LIMITED ENERGY STUDY \$0.03495 \$1,212 / YEAR \$3,326 / YEAR \$373 / YEAR \$58 / YEAR REPLACEMENT FIXTURE DATA \$301 / YEAR \$203 / YEAR ECO ENERGY CONSUMPTION INTERIOR LIGHTING: LIGHTING REPLACEMENT ELECTRIC COSTS. ENERGY CHARGE DEMAND CHARGE **ECO 1: INTERIOR / EXTERIOR LIGHTING** MH @ HPS @ HPS @ \$4,349 IYEAR **ECO DEMAND** MAINTENANCE SAVINGS 4 HRYR = HR/YR = HRYR = HRYR = HRMR = HRWR = **16 DECEMBER 1994** 21.20 279,630 KWH/YR 176,994 KWH/YR 89.63 KW **NET MAINTENANCE SAVINGS** \$5.25 /1,000 HOURS • \$26.00 /1,000 HOURS • \$70.00 /24,000 HOURS • \$5.00 /20,000 HOURS • \$47.00 /20,000 HOURS • \$38.00 /24,000 HOURS * 30,750 WATTS 44,075 WATTS 200 WATTS = 14,800 WATTS 0 WATTS 1 (1-YES, 0-NO) 750 WATTS = 1075 WATTS = WATTS = BUILDING #: 3642 - HANGAR BASELINE ENERGY CONSUMPTION **NET ENERGY SAVINGS** 74 LAMPS @ 41 LAMPS @ 74 LAMPS @ 41 LAMPS @ 5 2 EXISTING FIXTURE DATA BASELINE DEMAND 74 INCAND @ INCAND @ AREA USE: DAYSWEEK PEAK USE **HOURS/DAY** Ø Ø ₩ ¥ 4 4

2,424 KWHYR 0 WATTS 507 WATTS 270 WATTS 0 WATTS 0 WATTS (INCANDESCENT) (COMPACT FLUORESCENT) 0.78 KW \$298 MR \$591 NR OF HANGAR FACILITIES AT SIMMONS ARMY AIRFIELD PER KWH PER KW 13 W/FIXT = 13 W/FIXT = 18 W/FIXT = 26 W/F COMPACT FLUORESCENT REPLACEMENT NET DEMAND SAVINGS NET DOLLAR SAVINGS FORT BRAGG LIMITED ENERGY STUDY \$0.03495 \$786 / YEAR \$34 / YEAR ECO ENERGY CONSUMPTION INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT 0 LAMPS @ 139 LAMPS @ 15 LAMPS @ 0 LAMPS @ 0 LAMPS @ LAMPS @ 10 LAMPS @ 0 LA ELECTRIC COSTS: ENERGY CHARGE DEMAND CHARGE **ECO 1: INTERIOR / EXTERIOR LIGHTING** \$752 MEAR **ECO DEMAND** MAINTENANCE SAVINGS 3,120 HR/YR = 3,120 HR/YR = **16 DECEMBER 1994** 8,387 KWH/YR 10,811 KWH/YR 3.47 KW **NET MAINTENANCE SAVINGS** \$3.50 / 750 HOURS* \$2.00 / 10,000 HOURS* 0 WATTS 2,340 WATTS 1,125 WATTS 0 WATTS 0 WATTS 1 (1-YES, 0-NO) 52 W/FIXT = 60 W/FIXT = 75 W/FIXT = 90 W/FIXT = 100 W/FIX 3642 - HANGAR BASELINE ENERGY CONSUMPTION **NET ENERGY SAVINGS** 54 LAMPS @ 54 LAMPS @ 2/0 EXISTING INCANDESCENTS BASELINE DEMAND BUILDING #: AREA USE: LAMPS@ LAMPS@ LAMPS@ LAMPS@ **HOURS/DAY** DAYSWEEK PEAK USE 39

38,376 KWH/YR ₹ \$5,425 MR \$3,413 MR (WITHOUT SKYLIGHTS) (WITH SKYLIGHTS) (WITH SKYLIGHTS) (WITHOUT SKYLIGHTS) 30.75 OF HANGAR FACILITIES AT SIMMONS ARMY AIRFIELD PER KWH PER KW **NET DEMAND SAVINGS NET DOLLAR SAVINGS** FORT BRAGG LIMITED ENERGY STUDY \$0.03495 1,248 \$203 / YEAR \$301 / YEAR \$81 / YEAR \$120 / YEAR ECO ENERGY CONSUMPTION REVISED USAGE: HOURS/YEAR ELECTRIC COSTS: ENERGY CHARGE DEMAND CHARGE **ECO 1: INTERIOR / EXTERIOR LIGHTING** CONVENTIONAL SKY LIGHTS IN HANGARS \$303 N'EAR MAINTENANCE SAVINGS **ECO DEMAND** 3,120 HR/YR = 1,248 HR/YR = 1,248 HR/YR = 02 FEBRUARY 1995 95,940 KWH/YR 57,564 KWH/YR ₹ **NET MAINTENANCE SAVINGS** \$38.00 / 24,000 HOURS • \$47.00 / 20,000 HOURS • \$38.00 / 24,000 HOURS • \$47.00 / 20,000 HOURS • 30.75 30,750 W 1 (1-YES, 0-NO) 3,120 3642 - HANGAR BASELINE ENERGY CONSUMPTION **NET ENERGY SAVINGS** 41 LAMPS @ 41 LAMPS @ 41 LAMPS @ 41 LAMPS @ WATTAGE CONTROLLED: PEAK USE: CURRENT USAGE: HOURS/YEAR BUILDING #: BASELINE DEMAND

FEBRUARY 2, 1995 LIGHTING UPGRADE Date: Estimate: LIGHTING PRODUCT UPGRADE Description: HANGAR LIGHTING Bid Date: FEBRUARY 2, 1995 Project: Job #: 94013.04 **BLDG 3642** Location: City indx: Raleigh, NC Sg. footage: Description Line # Equipment Sub Labor Manhours Matl DEMOLITION, INCANDESCENT FIXTURES/EXIT SIGNS 0002010000 128.00 FIXTURE 0.00 0.00 7.10 7.10 Unit values 0.26 0.00 \$0 \$909 \$909 \$0 \$0 Totals 33,28 DEMOLITION, 1X4 FLUORESCENT FIXTURES 0002020000 31.00 FIXTURE 0.00 0.00 13.35 0.00 13.35 0.49 Unit values \$414 \$0 \$0 \$414 \$0 Totals 15.19 DEMOLITION, HIGH BAY FIXTURES 0002030000 82.00 FIXTURE 0.00 27.50 0.00 0.00 27.50 1.00 Unit values \$0 \$0 \$2,255 82.00 \$0 \$2,255 Totals 1X4 2-32 WATT FLUORESCENT LAMPS, SURFACE 0010000000 37.00 FIXTURE MOUNTED 0.00 0.00 91.50 1.14 60.00 31.50 Unit values \$0 \$0 \$3,386 \$2,220 \$1,166 42.18 Totals 1X4 2-32 WATT FLUORESCENT LAMPS, PENDANT 0010400000 2.00 FIXTURE MOUNTED 0.00 31.50 0.00 70.50 Unit values 1.14 39.00 \$0 \$0 \$141 2.28 \$78 \$63 Totals 1X8 2-59 WATT FLUORESCENT LAMPS, PENDANT 0010600000 29.00 FIXTURE MOUNTED 0.00 0.00 179.12 131.00 48.12 Unit values 1.75 \$0 \$5,194 \$1,395 \$0 \$3,799 Totals 50.75 400 WATT METAL HALIDE FIXTURE 0011000000 41.00 FIXTURE 0.00 0.00 207.00 55.00 262.00 Unit values 2.00 \$0 \$0 \$10,742 \$8,487 \$2,255 Totals 82.00 13 WATT COMPACT FLUORESCENT FIXTURE 0011100000 39.00 FIXTURE GLOBE ASSEMBLY 0.00 0.00 28.94 Unit values 0.13 25.50 3.44 \$134 \$0 \$0 \$1,129 Totals 5.07 \$995 18 WATT COMPACT FLUORESCENT FIXTURE 0011200000

GLOBE ASSEMBLY

15.00 FIXTURE

02-Feb-95		MeansDa	ata for Lot	us		Page	
Unit values Totals	0.13 1.95	25.50 \$383	3.44 \$52	0.00 \$0	0.00	28.94 \$435	
0011300000	250 WATT WITH COLOR		SURE SODIUM	FIXTURE	41.00	FIXTURE	
Unit values Totals	2.00 82.00	214.00 \$8,774	55.00 \$2,255	0.00 \$0	0.00 \$0	269.00 \$11,029	

=======================================		:======:	=======	========	========	========
Line #	Descripti	on.				
	Manhours	Matl	Labor	Equipment	Sub	Total
U00	397	\$24,736	\$10,898	\$0	\$0	\$35,634
ESTIMATE TOTAL	397	\$24,736	\$10,898	\$0	\$0	\$35,634
SALES TAX MATL MARKUP LABOR MARKUP EQUIPT MARKUP SUB MARKUP	5.00% 0.00% 0.00% 0.00% 0.00%	\$1,237 \$0	\$0	\$0	\$0	
TOTAL BEFORE CO CONTINGENCY BOND PROFIT	ONTINGENC 5.00% 5.00% 10.00%	\$25,973	\$10,898	\$0	\$0	\$36,871 \$1,844 \$1,844 \$3,687
JOB TOTAL						\$44,245

Estimate: LIGHTING UPGRADE Date:
Description: LIGHTING PRODUCT UPGRADE
Project: HANGAR LIGHTING Bid Dat
Location: BLDG 3642 Job #:

FEBRUARY 2, 1995

Bid Date: FEBRUARY 2, 1995

Sq. footage:

Job #: 94013.04 City indx:Raleigh, NC

	S	UMMARY				
	Manhours	Matl	Labor	Equipment	Sub	Total
=======================================	========		======			
U00	397	\$24,736	\$10,898	\$0	\$0	\$35,634
TOTAL	397	\$24,736	\$10,898	\$0	\$0	\$35,634
SALES TAX MATL MARKUP	5.00% 0.00%	\$1,237 \$0				
LABOR MARKUP EQUIPT MARKUP	0.00%	ų v	\$0	\$0		
SUB MARKUP	0.00%			Ψ •	\$0	
	CONTINGENC 5.00%	\$25,973	\$10,898	\$0	\$0	\$36,871 \$1,844
CONTINGENCY BOND	5.00%					\$1,844 \$3,687
PROFIT	10.00%					
JOB TOTAL						\$44,245

Estimate: BLDG 3642 Date: FEBRUARY 2, 1995
Description: CONVENTIONAL SKYLIGHT & CONTROLS
Project: HANGAR STUDY Bid Date: FEBRUARY 2, 1995
Location: BLDG 3642 Job #: 94013.04
Sq. footage: City indx:Raleigh, NC

Line #		Description
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	Manhours	Matl	Labor 1	Equipment	Sub	Total
					======	
0060000001	CONVENTION (DOUBLE PA		HT WITH 4'	' INSULATED		SO. FT
Unit values Totals	0.00	19.56 \$8,802	2.41 \$1,085	0.09 \$41	0.00	22.06 \$9,928
U00	0	\$8,802	\$1,085	\$41	\$0	\$9,928

```
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP)
                                                       LCCID FY95 (92)
INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 3807 SKY LIGHTS & LIGHTING PRODUCTS @ HANGARS
FISCAL YEAR 95 DISCRETE PORTION NAME: LIGHTING
ANALYSIS DATE: 02-03-95 ECONOMIC LIFE 10 YEARS PREPARED BY: JAH
1. INVESTMENT
A. CONSTRUCTION COST $
                              53422.
                               2671.
B. SIOH
                               2671.
C. DESIGN COST
D. TOTAL COST (1A+1B+1C) $
E. SALVAGE VALUE OF EXISTING EQUIPMENT $
F. PUBLIC UTILITY COMPANY REBATE $
                                               0.
G. TOTAL INVESTMENT (1D - 1E - 1F)
                                                         58764.
2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993
             UNIT COST SAVINGS ANNUAL $ DISCOUNT DISCOUNTED $/ MWH(1) MWH/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5)
    FUEL
                           121.
0.
0.
0.
0.
                                          4238.
    A. ELECT $ 34.95
                                                      8.77
                                                                    37167.
    B. DIST $ .00
                                                      9.26
                                                                    0.
                          0. $ 0.

0. $ 0.

0. $ 0.

0. $ 0.

0. $ 0.

$ 3838.

121. $ 8076.
                                                    10.08
    C. RESID $
                .00
                                                                       0.
                .00
                                                     10.39
                                                                       0.
    D. NAT G $
                .00
                                                      9.39
    E. COAL $
                                                               $
                                                                       0.
                                                      8.78
    F. LPG $
                .00
                                                                       0.
                                                              $ 32585.
                                                      8.49
    M. DEMAND SAVINGS
                                                                   69751.
   N. TOTAL
3. NON ENERGY SAVINGS(+) / COST(-)
   A. ANNUAL RECURRING (+/-)
                                                                    747.
       (1) DISCOUNT FACTOR (TABLE A)
                                                      8.49
       (2) DISCOUNTED SAVING/COST (3A X 3A1)
                                                                     6342.
  B. NON RECURRING SAVINGS(+) / COSTS(-)
                            SAVINGS(+) YR DISCNT DISCOUNTED
COST(-) OC FACTR SAVINGS(+)
                             COST(-) OC FACTR
(1) (2) (3)
                                                        SAVINGS(+)/
               ITEM
                                                        COST(-)(4)
                            $ 0.
                                                              0.
   d. TOTAL
   C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)$ 6342.
4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))$ 8823.
                                                                 6.66 YEARS
5. SIMPLE PAYBACK PERIOD (1G/4)
6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C)
                                                            $ 76093.
7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)=
                                                                1.29
    (IF < 1 PROJECT DOES NOT QUALIFY)
                                                                5.80 %
8. ADJUSTED INTERNAL RATE OF RETURN (AIRR):
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LIFE CYCLE COST ANALYSIS SUMMARY

STUDY: 3807

FORT BRAGG LIM OF HANGAR FACILITIES A ECO 1: INTERIOR 16 DEC	FORT BRAGG LIMITED ENERGY STUDY OF HANGAR FACILITIES AT SIMMONS ARMY AIRFIELD ECO 1: INTERIOR / EXTERIOR LIGHTING 16 DECEMBER 1994	
INTERIOR LIGHTING: FLUOI	INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT	
BUILDING #: 3807 - HANGAR AREA USE: HOURS/DAY DAYS/WEEK 7	ELECTRIC COSTS. ENERGY CHARGE \$0.03495 PER KWH DEMAND CHARGE \$9.25 PER KW	
EXISTING FIXTURE DATA	REPLACEMENT FIXTURE DATA	
2 LAMP U @ 92 W/FIXT = 0 WATTS	2 FOOT 0 2 LAMP U @ 58 W/FIXT = 0 WATTS	TTS
4 FOOT 1 LAMP @ 45 W/FIXT = 0 WATTS 163 2 LAMP @ 92 W/FIXT = 14,996 WATTS 22 3 LAMP @ 137 W/FIXT = 3,014 WATTS 4 LAMP @ 184 W/FIXT = 0 WATTS	4 FOOT 0 2 LAMP @ 29 W/FIXT = 0 WATTS 185 2 LAMP @ 87 W/FIXT = 10,730 WATTS 0 3 LAMP @ 87 W/FIXT = 0 WATTS 0 4 LAMP @ 118 W/FIXT = 0 WATTS	7.T.S 7.T.S 7.T.S 7.T.S
8 FOOT 2 LAMP @ 144 W/FIXT = 0 WATTS	8 FOOT 0 2 LAMP @ 125 W/FIXT = 0 WATTS	TTS.
BASELINE ENERGY CONSUMPTION 118,002 KWHYR	ECO ENERGY CONSUMPTION 70,303 K	KWHIYR
BASELINE DEMAND 18.01 KW	ECO DEMAND 10.73 KW	*
NET ENERGY SAVINGS 47,699 KWH/YR	NET DEMAND SAVINGS \$808 /YR NET DOLLAR SAVINGS \$2,475 /YR	~ ~
MAINTEN	MAINTENANCE SAVINGS	
22 LAMPS @ \$5.00 / 20,000 HOURS *	6,570 HR/YR = \$36 / YEAR (4' FLUORESCENT LAMPS)	S)
NET MAINTENANCE SAVINGS	\$36 MEAR	- (- 184 ; 4-2)

289 KWH/YR (INCANDESCENT) (COMPACT FLUORESCENT) \$33 /YR \$124 /YR 0.03 KW 11 REPLACEMENT SIGNS OF HANGAR FACILITIES AT SIMMONS ARMY AIRFIELD PER KWH PER KW WATTAGE: # OF EXIT SIGNS: NET DEMAND SAVINGS NET DOLLAR SAVINGS \$0.03495 FORT BRAGG LIMITED ENERGY STUDY \$337 / YEAR \$0 / YEAR ECO ENERGY CONSUMPTION ELECTRIC COSTS ENERGY CHARGE DEMAND CHARGE INTERIOR LIGHTING: EXIT SIGN REPLACEMENT ECO 1: INTERIOR / EXTERIOR LIGHTING 16 DECEMBER 1994 \$337 NEAR ECO DEMAND MAINTENANCE SAVINGS 0 18 8,760 HR/YR = HR/YR = FLUORESCENT EXIT SIGNS # OF EXIT SIGNS: WATTAGE: 2,891 KWH/YR 2,602 KWH/YR 0.33 KW **NET MAINTENANCE SAVINGS** \$3.50 / 1,000 HOURS * / 10,000 HOURS * 8 Ξ BUILDING #: 3807 - HANGAR BASELINE ENERGY CONSUMPTION INCANDESCENT EXIT SIGNS **NET ENERGY SAVINGS** 11 LAMPS @ LAMPS @ WATTAGE: # OF EXIT SIGNS: BASELINE DEMAND

The state of the s	EO DAJOS DE DIVALU	\$9.25 PER KW	3,942	N 106,434 KWH/YR	27 KW	AVINGS \$2,997 IYR AVINGS \$5,477 IYR		AR (WITHOUT SKYLIGHTS) AR (WITH SKYLIGHTS)	
SKY LIGHTS IN HANGARS	ا المالة	DEMAND CHARGE	REVISED USAGE: HOURS/YEAR	R ECO ENERGY CONSUMPTION	ECO DEMAND	R NET DEMAND SAVINGS NET DOLLAR SAVINGS	MAINTENANCE SAVINGS	6,570 HR/YR = \$936 / YEAR 3,942 HR/YR = \$562 / YEAR	\$374 MEAR
CONVENTIONAL	3807 - HANGAR	ECONTROLLED: 27,000 W PEAK USE: (1-YES, 0-NO)	RRENT USAGE: HOURS/YEAR 6,570	CONSUMPTION	EMAND 27 KW		MAINTEN	90 LAMPS @ \$38.00 / 24,000 HOURS • 90 LAMPS @ \$38.00 / 24,000 HOURS •	NET MAINTENANCE SAVINGS
CONVENTIONAL SKY LIGHTS IN HANGARS		YES, 0-NO)	REVIS	CONSUMPTION 177,390 KWH/YR	KW	NET ENERGY SAVINGS 70,956 KWH/YR	THE STATE OF THE S	INIAIN I ENANCE DAVING	\$38.00 / 24,000 HOU \$38.00 / 24,000 HOU

FEBRUARY 2, 1995 LIGHTING UPGRADE Date: Estimate: LIGHTING PRODUCT UPGRADE Description: Bid Date: FEBRUARY 2, 1995 HANGAR LIGHTING Project: Job #: BLDG 3807 94013.04 Location: City indx:Raleigh, NC Sq. footage: Description Line # Equipment Matl Labor Sub Manhours ______ DEMOLITION, 2X4 FLUORESCENT FIXTURES 0002000000 148.00 FIXTURE 0.00 0.00 13.35 0.00 Unit values 0.49 13.35 \$0 \$0 \$1,976 \$0 \$1,976 Totals 72.52 DEMOLITION, INCANDESCENT FIXTURES/EXIT SIGNS 0002010000 11.00 FIXTURE 0.00 7.10 0.00 0.00 7.10 Unit values 0.26 \$0 \$0 \$78 \$0 \$78 Totals 2.86 DEMOLITION, 1X4 FLUORESCENT FIXTURES 0002020000 37.00 FIXTURE 0.00 13.35 0.00 0.00 13.35 Unit values 0.49 \$0 \$494 \$0 \$0 \$494 Totals 18.13 2X4 2-32 WATT FLUORESCENT LAMPS, RECESSED 0010100000 126.00 FIXTURE MOUNTED 0.00 0.00 59.00 41.50 100.50 Unit values 1.51 \$5,229 \$0 190.26 \$7,434 \$0 \$12,663 Totals 1X4 2-32 WATT FLUORESCENT LAMPS, WALL MOUNTED 0010300000 26.00 FIXTURE 0.00 0.00 60.00 31.50 91.50 Unit values 1.14 \$819 \$0 \$0 29.64 \$1,560 \$2,379 Totals 1X4 2-32 WATT FLUORESCENT LAMPS, PENDANT 0010400000 MOUNTED 11.00 FIXTURE Unit values 1.14 39.00 31,50 0.00 0.00 70.50 \$0 Totals 12.54 \$429 \$347 \$0 \$776 2X4 2-32 WATT FLUORESCENT LAMPS, RECESSED 0010500000 22.00 FIXTURE MOUNTED WITH REFLECTORS 41.50 0.00 1.51 75.00 0.00 116.50 Unit values \$913 \$0 \$0 \$2,563 Totals 33.22 \$1,650 LED EXIT SIGN, RETROFIT KIT 0010700000 11.00 FIXTURE 0.00 27.50 0.00 62.50 1.00 35.00 Unit values \$303 \$0 \$0 \$688 Totals 11.00 \$385

02-Feb-95

Line #	Descripti	on				
	Manhours	Matl	Labor	Equipment	Sub	Total
U00	371	\$11,458	\$10,159	\$0	\$0	\$21,617
ESTIMATE TOTAL	371	\$11,458	\$10,159	\$0	\$0	\$21,617
SALES TAX MATL MARKUP LABOR MARKUP EQUIPT MARKUP SUB MARKUP	5.00% 0.00% 0.00% 0.00% 0.00%	\$573 \$0	\$0	\$0	\$0	
TOTAL BEFORE C CONTINGENCY BOND PROFIT	ONTINGENC 5.00% 5.00% 10.00%	\$12,031	\$10,159	\$0	\$0	\$22,190 \$1,109 \$1,109 \$2,219
JOB TOTAL						\$26,628

Estimate:

LIGHTING UPGRADE Date: LIGHTING PRODUCT UPGRADE

FEBRUARY 2, 1995

Description:

HANGAR LIGHTING

BLDG 3807

Bid Date: FEBRUARY 2, 1995

Project: Location: Sg. footage:

94013.04 Job #: City indx: Raleigh, NC

sq. rootage:	======	=======	=======	=========	========	=======
	S	UMMARY				
	Manhours	Matl	Labor	Equipment	Sub	Total
	*=======	======	======			
U00	371	\$11,458	\$10,159	\$0	\$0	\$21,617
TOTAL	371	\$11,458	\$10,159	\$0	\$0	\$21,617
SALES TAX MATL MARKUP	5.00%	\$573 \$0	\$0			
LABOR MARKUP EQUIPT MARKUP SUB MARKUP	0.00% 0.00% 0.00%		ŞO	\$0	\$0	
TOTAL BEFORE (CONTINGENCY BOND PROFIT	CONTINGENC 5.00% 5.00% 10.00%	\$12,031	\$10,159	\$0	\$0	\$22,190 \$1,109 \$1,109 \$2,219
JOB TOTAL						\$26,628

Estimate: BLDG 3807 Date: FEBRUARY 2, 1995
Description: CONVENTIONAL SKYLIGHT & CONTROLS
Project: HANGAR STUDY Bid Date: FEBRUARY 2, 1995
Location: BLDG 3807 Job #: 94013.04

Sq. footage:

Job #: 94013.04 City indx:Raleigh, NC

Line #

Description

=======================================	Manhours	Matl	Labor E	quipment	Sub	Total
006000001						=========
0060000001	(DOUBLE P		GHT WITH 4"	INSULATED	CURBS	~~
Unit values Totals	0.00	19.56 \$15,257	2.41 \$1,880	0.09 \$70	780.00 0.00 \$0	SQ. FT 22.05 \$17,207
U00 .	0	\$15,257	\$1,880	\$70	\$0	\$17,207

Line #	Descripti	on				
	Manhours	Matl	Labor	Equipment	Sub	Total
					======:	
1611350023	LOW VOLTA	GE WIRE #:	18-4C			
Unit values Totals	1.23 17.22	15.40 \$216	34.00 \$476	0.00	14.00 0.00 \$0	CLF 49.40 \$692
1611750101	LIGHTING (CONTACTOR				
Unit values Totals	2.00 12.00	137.00 \$822	55.00 \$330	0.00 \$0	6.00 0.00 \$0	192.00 \$1,152
1611850101	PHOTO SWIT	rch 50-500	FC ADJUS	STABLE		
Unit values Totals	1.00 4.00	290.00 \$1,160	27.50 \$110	0.00	4.00 0.00 \$0	EA. 317.50 \$1,270
1611870101	LOW VOLTA	SE TRANS 1	15V-24V			
Unit values Totals	0.67 0.67	64.00 \$64	18.35 \$18	0.00 \$0	1.00 0.00 \$0	EA. 82.35 \$82
1611870102	SWITCHING	RELAYS				
Unit values Totals	0.50 4.00	11.30 \$90	13.75 \$110	0.00 \$0	8.00 0.00 \$0	EA. 25.05 \$200
1611950101	1/2" EMT					
Unit values Totals	0.05 25.00	0.38 \$190	1.29 \$645	0.00 \$0	500.00 0.00 \$0	LF 1.67 \$835
U16 ELECTRICAL	63	\$2,542	\$1,689	\$0	\$0	\$4,231

	=======	=======	=======	=========		========
Line #	Descripti	lon				
=======================================	Manhours	Matl	Labor	Equipment	Sub	Total
ESTIMATE TOTAL	63	\$17,799	\$3,569	\$70	\$0	\$21,438
SALES TAX MATL MARKUP	5.00% 0.00%	\$890 \$0				
LABOR MARKUP EQUIPT MARKUP	0.00%	·	\$0	\$0		
SUB MARKUP	0.00%			·	\$0	
TOTAL BEFORE CO CONTINGENCY BOND PROFIT	ONTINGENC 5.00% 5.00% 10.00%	\$18,689	\$3,569	\$70	\$0	\$22,328 \$1,116 \$1,116 \$2,233
JOB TOTAL						\$26,794

BLDG 3807 Date: FEBRO CONVENTIONAL SKYLIGHT & CONTROLS

Estimate: Description:

FEBRUARY 2, 1995

\$22,328

\$1,116 \$1,116 \$2,233

\$26,794

Project:

HANGAR STUDY BLDG 3807

5.00%

10.00%

5.00%

Bid Date: FEBRUARY 2, 1995

Location: Sq. footage:

CONTINGENCY

BOND

PROFIT

JOB TOTAL

Job #: 94013.04 City indx: Raleigh, NC

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	5	SUMMARY				=======
=======================================	Manhours	Matl	Labor	Equipment	Sub	Total
U00 U16 ELECTRICAL	0 63	\$15,257 \$2,542	\$1,880 \$1,689	\$70 \$0	\$0 \$0	\$17,207 \$4,231
TOTAL	63	\$17,799	\$3,569	\$70	\$0	\$21,438
SALES TAX MATL MARKUP LABOR MARKUP EQUIPT MARKUP SUB MARKUP	5.00% 0.00% 0.00% 0.00% 0.00%	\$890 \$0	\$0	\$0	\$0	
TOTAL BEFORE CONTINCENCY	NTINGENC	\$18,689	\$3,569	\$70	\$0	\$22.328

ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID FY95 (92)
INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3 PROJECT NO. & TITLE: 3954 SKY LIGHTS & LIGHTING PRODUCTS @ HANGARS FISCAL YEAR 95 DISCRETE PORTION NAME: LIGHTING ANALYSIS DATE: 02-03-95 ECONOMIC LIFE 10 YEARS PREPARED BY: JAH 1. INVESTMENT A. CONSTRUCTION COST \$ 29241. 1462. B. SIOH 1462. C. DESIGN COST D. TOTAL COST (1A+1B+1C) \$ 32165. F. PUBLIC UTILITY COMPANY REBATE \$
G. TOTAL INVESTMENT (10 - 17 0. 32165. 2. ENERGY SAVINGS (+) / COST (-) DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993 UNIT COST SAVINGS ANNUAL \$ DISCOUNT DISCOUNTED \$/ MWH(1) MWH/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5) FUEL 54. 0. 0. 0. 0. 1875. 8.77 0. 9.26 0. 10.08 0. 10.39 A. ELECT \$ 34.95 B. DIST \$.00 16446. 0. \$ 0. 0. \$ 0. 0. \$ 0. 0. \$ 0. 0. \$ 0. 0. \$ 0. 54. \$ 2748. 54. \$ 4623. 0. C. RESID \$.00 0. .00 D. NAT G \$ 0. .00 E. COAL \$ 9.39 0. F. LPG \$.00 8.78 8.49 0. M. DEMAND SAVINGS \$ 23331. N. TOTAL 39776. 3. NON ENERGY SAVINGS(+) / COST(-) 254. A. ANNUAL RECURRING (+/-) ANNUAL RECURKING (+/-)
(1) DISCOUNT FACTOR (TABLE A) 8.49 (2) DISCOUNTED SAVING/COST (3A X 3A1) 2156. B. NON RECURRING SAVINGS(+) / COSTS(-) SAVINGS(+) YR DISCNT DISCOUNTED

COST(-) OC FACTR SAVINGS(+),

(1) (2) (3) COST(-)(4) ITEM SAVINGS(+)/ d. TOTAL \$ 0. C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)\$ 2156. 4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))\$ 6.59 YEARS 5. SIMPLE PAYBACK PERIOD (1G/4) \$ 41933. 6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) 7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.30 (IF < 1 PROJECT DOES NOT QUALIFY) 8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): 5.87 %

LIFE CYCLE COST ANALYSIS SUMMARY

STUDY: 3954

FORT BRAGG LIMITED ENERGY STUDY OF HANGAR FACILITIES AT SIMMONS ARMY AIRFIELD ECO 1: INTERIOR / EXTERIOR LIGHTING 16 DECEMBER 1994	FORT BRAGG LIMITED ENERGY STUDY IGAR FACILITIES AT SIMMONS ARMY AIR ECO 1: INTERIOR / EXTERIOR LIGHTING 16 DECEMBER 1994	FIELD
INTERIOR LIGHTING: FLUORE	INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT	
BUILDING #: 3954 - HANGAR AREA USE: HOURS/DAY DAYS/WEEK 5	ELECTRIC COSTS: \$0.03495 P ENERGY CHARGE \$9.25 P	PER KWH PER KW
EXISTING_FIXTURE_DATA	REPLACEMENT FIXTURE DATA	
2 FOOT 2 LAMP U @ 92 W/FIXT = 0 WATTS	2 FOOT 0 2 LAMP U @ 58 W/	58 W/FIXT = 0 WATTS
4 FOOT 11 2 LAMP @ 92 W/FIXT = 1,012 WATTS 3 LAMP @ 137 W/FIXT = 0 WATTS 53 4 LAMP @ 184 W/FIXT = 9,752 WATTS	4 FOOT 11 2 LAMP @ 58 W/FIXT = 53 3 LAMP @ 87 W/FIXT = 0 4 LAMP @ 118 W/FIXT	FIXT = 638 WATTS FIXT = 4.611 WATTS FIXT = 0 WATTS
8 FOOT 12 2 LAMP @ 144 W/FIXT = 1,728 WATTS	8 FOOT 12 2 LAMP @ 125 W/FIXT =	FIXT = 1,500 WATTS
BASELINE ENERGY CONSUMPTION 38,975 KWHIYR	ECO ENERGY CONSUMPTION	21,057 KWH/YR
BASELINE DEMAND 12.49 KW	ECO DEMAND	6.75 KW
NET ENERGY SAVINGS 17,918 KWH/YR	NET DEMAND SAVINGS NET DOLLAR SAVINGS	\$637 /YR \$1,264 /YR
MAINTENAN	MAINTENANCE SAVINGS	

(4' FLUORESCENT LAMPS)

\$41 / YEAR

3,120 HR/YR=

\$41 NEAR

NET MAINTENANCE SAVINGS

\$5.00 / 20,000 HOURS *

53 LAMPS @

112 KWHYYR 0 WATTS 0 WATTS 36 WATTS 0 WATTS 0 WATTS (INCANDESCENT) (COMPACT FLUORESCENT) Ş \$25 MR \$13 MR 0.04 OF HANGAR FACILITIES AT SIMMONS ARMY AIRFIELD PER KWH PER KW 13 W/FIXT = 13 W/FIXT = 18 W/FIXT = 26 W/F COMPACT FLUORESCENT REPLACEMENT **NET DEMAND SAVINGS NET DOLLAR SAVINGS** \$0.03495 FORT BRAGG LIMITED ENERGY STUDY \$29 / YEAR \$1 / YEAR ECO ENERGY CONSUMPTION INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT LAMPS @ LAMPS @ LAMPS @ LAMPS @ ELECTRIC COSTS: ENERGY CHARGE DEMAND CHARGE **ECO 1: INTERIOR / EXTERIOR LIGHTING** \$28 NEAR ECO DEMAND MAINTENANCE SAVINGS 00000 3,120 HR/YR = 3,120 HR/YR = **16 DECEMBER 1994** 468 KWH/YR 356 KWH/YR 0.15 KW **NET MAINTENANCE SAVINGS** \$3.50 / 750 HOURS * \$2.00 / 10,000 HOURS * 0 WATTS 0 WATTS 150 WATTS 0 WATTS 12 5 1 (1-YES, 0-NO) 52 W/FIXT = 60 W/FIXT = 75 W/FIXT = 90 W/FIXT = 100 W/FIX 3954 - HANGAR BASELINE ENERGY CONSUMPTION **NET ENERGY SAVINGS** 2 LAMPS @ **EXISTING INCANDESCENTS** BUILDING #: BASELINE DEMAND AREA USE: HOURS/DAY LAMPS @ LAMPS @ LAMPS @ LAMPS @ LAMPS @ DAYSWEEK PEAK USE

FORT BRAGG LIMITED ENERGY STUDY OF HANGAR FACILITIES AT SIMMONS ARMY AIRFIELD ECO 1: INTERIOR / EXTERIOR LIGHTING 02 FEBRUARY 1995	CONVENTIONAL SKY LIGHTS IN HANGARS	ELECTRIC COSTS: \$0.03495	18,900 W (1-YES, 0-NO)	E: REVISED USAGE: 1,248 HOURS/YEAR 1,248	SUMPTION 58,968 KWHYR ECO ENERGY CONSUMPTION 23,587 KWHYR	18.9 KW ECO DEMAND 18.9 KW	SAVINGS 35,381 KWH/YR NET DEMAND SAVINGS \$2,098 /YR NET DOLLAR SAVINGS \$3,334 /YR	MAINTENANCE SAVINGS	PS @ \$47.00 / 20,000 HOURS • 3,120 HR/YR = \$308 / YEAR (WITHOUT SKYLIGHTS) PS @ \$47.00 / 20,000 HOURS • 1,248 HR/YR = \$123 / YEAR (WITH SKYLIGHTS)	NET MAINTENANCE SAVINGS \$185 MEAR
FORT OF HANGAR		BUILDING #: 3954 - HANGAR	WATTAGE CONTROLLED: 18,900 W	CURRENT USAGE; HOURS/YEAR 3,120	BASELINE ENERGY CONSUMPTION	BASELINE DEMAND	NET ENERGY SAVINGS		42 LAMPS @ \$47.00 /2 42 LAMPS @ \$47.00 /2	NET MAINTE

LIGHTING UPGRADE Estimate: Date: FEBRUARY 2, 1995 LIGHTING PRODUCT UPGRADE Description: Bid Date: FEBRUARY 2, 1995 HANGAR LIGHTING Project: BLDG 3954 Job #: 94013.04 Location: Sq. footage: City indx: Raleigh, NC ____________ Description Line # Equipment Manhours Matl Labor 0002000000 DEMOLITION, 2X4 FLUORESCENT FIXTURES 53.00 FIXTURE Unit values 0.00 0.49 13.35 0.00 0.00 13.35 Totals 25.97 \$0 \$708 \$0 \$0 \$708 0002010000 DEMOLITION, INCANDESCENT FIXTURES/EXIT SIGNS 2.00 FIXTURE Unit values 0.26 0.00 7.10 0.00 0.00 7.10 Totals 0.52 \$0 \$14 \$0 \$0 \$14 0002020000 DEMOLITION, 1X4 FLUORESCENT FIXTURES 23.00 FIXTURE Unit values 13.35 0.00 0.49 0.00 0.00 13.35 Totals \$0 11.27 \$307 \$0 \$0 \$307 0010000000 1X4 2-32 WATT FLUORESCENT LAMPS, SURFACE MOUNTED 10.00 FIXTURE Unit values 1.14 60.00 31.50 0.00 0.00 91.50 Totals 11.40 \$600 \$315 \$0 \$0 \$915 1X4 2-32 WATT FLUORESCENT LAMPS, PENDANT 0010400000 MOUNTED 1.00 FIXTURE Unit values 1.14 39.00 31.50 0.00 0.00 70.50 Totals 1.14 \$39 \$32 \$0 \$0 \$71 0010500000 2X4 2-32 WATT FLUORESCENT LAMPS, RECESSED MOUNTED WITH REFLECTORS 53.00 FIXTURE Unit values 1.51 75.00 41.50 0.00 0.00 116.50 \$3,975 Totals 80.03 \$2,200 \$0 \$0 \$6,175 0010600000 1X8 2-59 WATT FLUORESCENT LAMPS, PENDANT MOUNTED 12.00 FIXTURE Unit values 1.75 131.00 48.12 0.00 0.00 179.12 Totals 21.00 \$1,572 \$577 \$0 \$0 \$2,149 0011200000 18 WATT COMPACT FLUORESCENT FIXTURE GLOBE ASSEMBLY 2.00 FIXTURE Unit values 0.13 25.50 0.00 3.44 0.00 28.94 Totals 0.26 \$7 \$51 \$0 \$0 \$58

Line #	Description	on				
	Manhours	Matl	Labor	Equipment	Sub	Total
U00	152	\$6,237	\$4,160	\$0	\$0	\$10,397
ESTIMATE TOTAL	152	\$6,237	\$4,160	\$0	\$0	\$10,397
SALES TAX MATL MARKUP LABOR MARKUP EQUIPT MARKUP SUB MARKUP	5.00% 0.00% 0.00% 0.00%	\$312 \$0	\$0	\$0	\$0	
TOTAL BEFORE CONTINGENCY BOND PROFIT	ONTINGENC 5.00% 5.00% 10.00%	\$6,549	\$4,160	\$0	\$0	\$10,709 \$535 \$535 \$1,071
JOB TOTAL						\$12,851

Estimate: LIGHTING UPGRADE Date: FEBRUARY 2, 1995
Description: LIGHTING PRODUCT UPGRADE
Project: HANGAR LIGHTING Bid Date: FEBRUARY 2, 1995
Location: BLDG 3954 Job #: 94013.04
Sq. footage: City indx:Raleigh, NC

SUMMARY
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	50	JMMARI				
	Manhours	Matl	Labor	Equipment	Sub	Total
=======================================						
000	152	\$6,237	\$4,160	\$0	\$0	\$10,397
TOTAL	152	\$6,237	\$4,160	\$0	\$0	\$10,397
SALES TAX MATL MARKUP LABOR MARKUP	5.00% 0.00% 0.00%	\$312 \$0	\$0			
EQUIPT MARKUP SUB MARKUP	0.00%		4.5	\$0	\$0	
TOTAL BEFORE (CONTINGENCY BOND PROFIT	CONTINGENC 5.00% 5.00% 10.00%	\$6,549	\$4,160	\$0	\$0	\$10,709 \$535 \$535 \$1,071
JOB TOTAL						\$12,851

Estimate: BLDG 3954 Date: FEBRUARY 2, 1995
Description: CONVENTIONAL SKYLIGHT & CONTROLS
Project: HANGAR STUDY Bid Date: FEBRUARY 2, 1995 Project: Location: BLDG 3954 Job #: 94013.04 City indx: Raleigh, NC Sq. footage: Description Line # Manhours Matl Labor Equipment Sub Total -----CONVENTIONAL SKYLIGHT WITH 4" INSULATED CURBS 0060000001 (DOUBLE PANED) 450.00 SQ. FT Unit values 0.00 19.56 2.41 0.09 0.00 22.05 Totals 0.00 \$8,802 \$1,085 \$41 \$0 \$9,928 UOO 0 \$8,802 \$41 \$1,085 \$0 \$9,928

Line #	Descripti	.on				
	Manhours	Matl	Labor	Equipment	Sub	Total
		·		=========		========
1611350023	LOW VOLTA	GE WIRE #:	18-4C			
Unit values Totals	1.23 12.30	15.40 \$154	34.00 \$340	0.00 \$0	10.00 0.00 \$0	CLF 49.40 \$494
1611750101	LIGHTING	CONTACTOR				
Unit values Totals	2.00 6.00	137.00 \$411	55.00 \$165	0.00	3.00 0.00 \$0	EA. 192.00 \$576
1611850101	PHOTO SWI	TCH 50-500	FC ADJUS	STABLE		
Unit values Totals	1.00 4.00	290.00 \$1,160	27.50 \$110	0.00	4.00 0.00 \$0	EA. 317.50 \$1,270
1611870101	LOW VOLTA	GE TRANS 1	15V-24V			
Unit values Totals	0.67 0.67	64.00 \$64	18.35 \$18	0.00	1.00 0.00 \$0	EA. 82.35 \$82
1611870102	SWITCHING	RELAYS				
Unit values Totals	0.50 4.00	11.30 \$90	13.75 \$110	0.00 \$0	8.00 0.00 \$0	EA. 25.05 \$200
1611950101	1/2" EMT					
Unit values Totals	0.05 17.00	0.38 \$129	1.29 \$439	0.00	340.00 0.00 \$0	LF 1.67 \$568
U16 ELECTRICAL	44	\$2,008	\$1,182	\$0	\$0	\$3,190

Line #	Descripti	.on				
	Manhours	Matl	Labor	Equipment	Sub	Total
ESTIMATE TOTAL	44	\$10,810	\$2,267	\$41	\$0	\$13,118
SALES TAX MATL MARKUP	5.00% 0.00%	\$541 \$0				
LABOR MARKUP EQUIPT MARKUP SUB MARKUP	0.00% 0.00% 0.00%		\$0	\$0	\$0	
TOTAL BEFORE CO CONTINGENCY BOND PROFIT	ONTINGENC 5.00% 5.00% 10.00%	\$11,351	\$2,267	\$41	\$0	\$13,659 \$683 \$683 \$1,366
JOB TOTAL						\$16,390

Estimate: BLDG 3954 Date: FEBRUARY 2, 1995
Description: CONVENTIONAL SKYLIGHT & CONTROLS
Project: HANGAR STUDY Bid Date: FEBRUARY 2, 1995

FEBRUARY 2, 1995

Job #: 94013.04

Location: Sq. footage: BLDG 3954

City indx:Raleigh, NC

SUMMARY

	Manhours	Matl	Labor	Equipment	Sub	Total
						========
U00 U16 ELECTRICAL	0 44	\$8,802 \$2,008	\$1,085 \$1,182	\$41 \$0	\$0 \$0	\$9,928 \$3,190
TOTAL	44	\$10,810	\$2,267	\$41	\$0	\$13,118
SALES TAX MATL MARKUP LABOR MARKUP	5.00% 0.00% 0.00%	\$541 \$0	\$0			
EQUIPT MARKUP SUB MARKUP	0.00% 0.00%		**	\$0	\$0	
TOTAL BEFORE CO CONTINGENCY BOND PROFIT	ONTINGENC 5.00% 5.00% 10.00%	\$11,351	\$2,267	\$41	\$0	\$13,659 \$683 \$683 \$1,366
JOB TOTAL						\$16,390

LIFE CYCLE COST ANALYSIS SUMMARY STUDY: 3962
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID FY95 (92) INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3 PROJECT NO. & TITLE: 3962 SKY LIGHTS & LIGHTING PRODUCTS @ HANGARS FISCAL YEAR 95 DISCRETE PORTION NAME: LIGHTING ANALYSIS DATE: 02-03-95 ECONOMIC LIFE 10 YEARS PREPARED BY: JAH 1. INVESTMENT A. CONSTRUCTION COST 47814. B. SIOH C. DESIGN COST \$ 2391. Ŝ 2391. D. TOTAL COST (1A+1B+1C) \$ 52595. E. SALVAGE VALUE OF EXISTING EQUIPMENT \$ 0. F. PUBLIC UTILITY COMPANY REBATE 0. G. TOTAL INVESTMENT (1D - 1E - 1F) 52595. 2. ENERGY SAVINGS (+) / COST (-) DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993 UNIT COST SAVINGS ANNUAL \$ DISCOUNTED \$/ MWH(1) MWH/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5) FUEL A. ELECT \$ 34.95 231. 8090. 8.77 70949. \$ 0. \$ 0. \$ 0. \$ 6480. \$ 14570. B. DIST \$.00 0. 9.26 0. 0. C. RESID \$.00 10.08 0. D. NAT G \$.00 10.39 0. .00 E. COAL \$ 9.39 0. F. LPG \$.00 8.78 0. M. DEMAND SAVINGS 55015. 8.49 N. TOTAL 231. 125964. 3. NON ENERGY SAVINGS(+) / COST(-) \$ 7458. A. ANNUAL RECURRING (+/-)(1) DISCOUNT FACTOR (TABLE A) 8.49 (2) DISCOUNTED SAVING/COST (3A X 3A1) \$ 63318. B. NON RECURRING SAVINGS(+) / COSTS(-) SAVINGS(+) YR DISCNT DISCOUNTED COST(-) OC FACTR
(1) (2) (3) ITEM SAVINGS(+)/ COST(-)(4) d. TOTAL \$ 0. C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)\$ 63318. 4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))\$ 22028. 5. SIMPLE PAYBACK PERIOD (1G/4) 2.39 YEARS 6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) \$ 189282. 7. SAVINGS TO INVESTMENT RATIO (SIR) = (6 / 1G) =3.60 (IF < 1 PROJECT DOES NOT QUALIFY) 8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): 17.19 %

LIFE CYCLE COST ANALYSIS SUMMARY

35,733 KWH/YR 3,364 WATTS 870 WATTS 6,844 WATTS 0 WATTS **375 WATTS** Ş (4' FLUORESCENT LAMPS) \$758 MR \$1,502 MR 11.45 OF HANGAR FACILITIES AT SIMMONS ARMY AIRFIELD PER KWH PER KW 58 W/FIXT = 87 W/FIXT = 118 W/FIXT = 58 W/FIXT = 125 W/FIXT = NET DEMAND SAVINGS NET DOLLAR SAVINGS FORT BRAGG LIMITED ENERGY STUDY \$0.03495 REPLACEMENT FIXTURE DATA \$8 / YEAR ECO ENERGY CONSUMPTION INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT 0 2 LAMP U@ 58 2 LAMP @ 10 3 LAMP @ 58 4 LAMP @ ELECTRIC COSTS ENERGY CHARGE DEMAND CHARGE 3 2 LAMP @ **ECO 1: INTERIOR / EXTERIOR LIGHTING** SB IYEAR ECO DEMAND MAINTENANCE SAVINGS 3,120 HR/YR= 2 F00T 4 F00T 8 FOOT 16 DECEMBER 1994 57,034 KWH/YR 21,300 KWH/YR 18.28 KW **NET MAINTENANCE SAVINGS** \$5.00 / 20,000 HOURS * 5,336 WATTS 0 WATTS 12,512 WATTS 0 WATTS 432 WATTS 92 W/FIXT = 137 W/FIXT = 184 W/FIXT = 92 W/FIXT = 144 W/FIXT = BUILDING #: 3962 - HANGAR BASELINE ENERGY CONSUMPTION **NET ENERGY SAVINGS** 2 2 10 LAMPS @ EXISTING FIXTURE DATA 2 LAMP U@ AREA USE: HOURS/DAY 58 2 LAMP @ 3 LAMP @ 68 4 LAMP @ BASELINE DEMAND DAYSWEEK 3 2 LAMP @ 4 FOOT 8 FOOT

82,555 KWH/YR 0 WATTS 0 WATTS 0 WATTS 0 WATTS 12,600 WATTS (INCANDESCENT) (HIGH PRESSURE SODIUM) \$2,098 MR \$6,426 MR 12.60 KW OF HANGAR FACILITIES AT SIMMONS ARMY AIRFIELD PER KWH PER KW WATTS = WATTS = 300 WATTS = WATTS = WATTS = **NET DEMAND SAVINGS NET DOLLAR SAVINGS** \$0.03495 FORT BRAGG LIMITED ENERGY STUDY REPLACEMENT FIXTURE DATA \$7,174 / YEAR \$437 / YEAR ECO ENERGY CONSUMPTION ELECTRIC COSTS. ENERGY CHARGE DEMAND CHARGE INTERIOR LIGHTING: LIGHTING REPLACEMENT HPS @ MH @ HPS @ HPS @ ECO 1: INTERIOR / EXTERIOR LIGHTING 16 DECEMBER 1994 \$6,737 N'EAR ECO DEMAND MAINTENANCE SAVINGS 20000 6,570 HR/YR = 6,570 HR/YR = KWH/YR 123,833 KWH/YR Ş **NET MAINTENANCE SAVINGS** 206,388 31.50 \$26.00 /1,000 HOURS * \$38.00 /24,000 HOURS * 31,500 WATTS 0 WATTS 0 WATTS 0 WATTS 1 (1-YES, 0-NO) 750 WATTS = WATTS = WATTS = WATTS = WATTS = BUILDING #: 3962 - HANGAR BASELINE ENERGY CONSUMPTION **NET ENERGY SAVINGS** 42 LAMPS @ 42 LAMPS @ 18 EXISTING FIXTURE DATA INCAND @ QUARTZ @ QUARTZ @ BASELINE DEMAND AREA USE: HOURS/DAY DAYSWEEK PEAK USE 42

FORT BRAGG LIMITED ENERGY STUDY OF HANGAR FACILITIES AT SIMMONS ARMY AIRFIELD ECO 1: INTERIOR / EXTERIOR LIGHTING 16 DECEMBER 1994	BUILDING #: 3962 - HANGAR AREA USE: HOURS/DAYS/WEEK PEAK USE 1 (1-YES, 0-NO)	COMPACT FLUORESCENT REPLACEMENT LAMPS @ 52 W/FIXT = 0 WATTS 0 WATTS 20 LAMPS @ 60 W/FIXT = 0 WATTS 0 WATTS 20 LAMPS @ 75 W/FIXT = 0 WATTS 20 LAMPS @ 16 W/FIXT = 0 WATTS LAMPS @ 100 W/FIXT = 0 WATTS LAMPS @ 26 W/FIXT = 0 WATTS LAMPS @ 26 W/FIXT = 0 WATTS	BASELINE ENERGY CONSUMPTION 4,680 KWH/YR ECO ENERGY CONSUMPTION 1,123 KWH/YR BASELINE DEMAND 0.36 KW ECO DEMAND 0.36 KW	NET ENERGY SAVINGS 3,557 KWHMR NET DEMAND SAVINGS \$127 MR NET DOLLAR SAVINGS \$251 MR	20 LAMPS @ \$3.50 / 750 HOURS • 3,120 HR/YR = \$291 / YEAR (INCANDESCENT) 20 LAMPS @ \$2.00 / 10,000 HOURS • 3,120 HR/YR = \$12 / YEAR (COMPACT FLUORESCENT) NET MAINTENANCE SAVINGS \$279 MEAR
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PTION INGS IN NET	
	GAR FACILITIES AT SIMMONS ARMY AIRFIELD ECO 1: INTERIOR / EXTERIOR LIGHTING O2 FEBRUARY 1995 CONVENTIONAL SKY LIGHTS IN HANGARS CONVENTIONAL SKY LIGHTS IN HANGARS ELECTRIC COSTS: ENERGY CHARGE \$50.03495 PER KWH DEMAND CHARGE \$50.03495 PER KWH HOURS/YEAR 3,942 126,955 KWH/YR ECO ENERGY GONSUMPTION 124,173
31.5 KW ECO DEMAND 31.5	GAR FACILITIES AT SIMMONS ARMY AIRFIELD ECO 1: INTERIOR / EXTERIOR LIGHTING 22 FEBRUARY 1995 CONVENTIONAL SKY LIGHTS IN HANGARS CONVENTIONAL SKY LIGHTS IN HANGARS CONVENTIONAL SKY LIGHTS IN HANGARS ELECTRIC COSTS: ENERGY CHARGE SOO W 1,500 W 1,500 W 1,1-YES, 0-NO) REVISED USAGE: 6,570 REVISED USAGE: HOURS/YEAR 206,955 KWH/YR ECO ENERGY GONSUMPTION 124,173
206,955 KWHYR ECO ENERGY CONSUMPTION 124,173	FORT BRAGG LIMITED ENERGY STUDY OF HANGAR FACILITIES AT SIMMONS ARMY AIRFIELD ECO 1: INTERIOR / EXTERIOR LIGHTING CONVENTIONAL SKY LIGHTS IN HANGARS BUILDING #: 3962 - HANGAR ELECTRIC COSTS: ENERGY CHARGE CONVENTIONAL SKY LIGHTS IN HANGARS ELECTRIC COSTS: ENERGY CHARGE \$ \$0.03495 PER KWH PEAK USE. 1 (1-YES, 0-NO) REVISED USAGE: HOURS/YEAR 3,942
REVISED USAGE: 6,570 HOURS/YEAR	FORT BRAGG LIMITED ENERGY STUDY OF HANGAR FACILITIES AT SIMMONS ARMY AIRFIELD ECO 1: INTERIOR / EXTERIOR LIGHTING 02 FEBRUARY 1995 CONVENTIONAL SKY LIGHTS IN HANGARS BUILDING #: 3962 - HANGAR BUILDING #: 31,500 W WATTAGE CONTROLLED: 31,500 W PEAK USE: 1 (1-YES, 0-NO)
	FORT BRAGG LIMITED ENERGY STUDY OF HANGAR FACILITIES AT SIMMONS ARMY AIRFIELD ECO 1: INTERIOR / EXTERIOR LIGHTING 02 FEBRUARY 1995 CONVENTIONAL SKY LIGHTS IN HANGARS BUILDING #: 3962 - HANGAR
31 500 W	FORT BRAGG LIMITED ENERGY STUDY OF HANGAR FACILITIES AT SIMMONS ARMY AIRFIELD ECO 1: INTERIOR / EXTERIOR LIGHTING 02 FEBRUARY 1995 CONVENTIONAL SKY LIGHTS IN HANGARS
ANGAR ELECTRIC COSTS: ENERGY CHARGE \$0.03495 31 500 W	FORT BRAGG LIMITED ENERGY STUDY OF HANGAR FACILITIES AT SIMMONS ARMY AIRFIELD ECO 1: INTERIOR / EXTERIOR LIGHTING 02 FEBRUARY 1995
ANGAR ELECTRIC COSTS: ENERGY CHARGE \$0.03495 DEMAND CHARGE \$9.25	

FEBRUARY 2, 1995 LIGHTING UPGRADE Date: LIGHTING PRODUCT UPGRADE Description: HANGAR LIGHTING Bid Date: FEBRUARY 2, 1995 Project: Job #: 94013.04 BLDG 3962 Location: City indx: Raleigh, NC Sg. footage: _______ Description Line # Equipment Sub Matl Labor Manhours ______ DEMOLITION, 2X4 FLUORESCENT FIXTURES 0002000000 10.00 FIXTURE 0.49 0.00 13.35 0.00 0.00 13.35 Unit values \$0 Totals 4.90 \$0 \$134 \$0 \$134 DEMOLITION, INCANDESCENT FIXTURES/EXIT SIGNS 0002010000 20.00 FIXTURE 0.00 0.00 7.10 7.10 Unit values 0.26 0.00 \$0 \$142 \$0 5.20 \$0 \$142 Totals DEMOLITION, 1X4 FLUORESCENT FIXTURES 0002020000 119.00 FIXTURE 0.00 0.00 0.00 13.35 13.35 Unit values 0.49 \$0 \$0 Totals \$1,589 58.31 \$0 \$1,589 0002030000 DEMOLITION, HIGH BAY FIXTURES 42.00 FIXTURE 0.00 27.50 0.00 0.00 27.50 Unit values 1.00 \$0 \$1,155 \$0 \$1,155 \$0 Totals 42.00 1X4 2-32 WATT FLUORESCENT LAMPS, PENDANT 0010400000 58.00 FIXTURE MOUNTED 39.00 31.50 0.00 0.00 70.50 1.14 Unit values \$1,827 \$0 \$4,089 \$2,262 \$0 66.12 Totals 1X8 2-59 WATT FLUORESCENT LAMPS, PENDANT 0010600000 3.00 FIXTURE MOUNTED 0.00 0.00 179.12 131.00 48.12 Unit values 1.75 \$144 \$0 \$537 Totals 5.25 \$393 18 WATT COMPACT FLUORESCENT FIXTURE 0011200000 20.00 FIXTURE GLOBE ASSEMBLY 0.00 0.00 28.94 3.44 Unit values 0.13 25.50 \$0 \$579 \$69 \$0 Totals 2.60 \$510 250 WATT HIGH PRESSURE SODIUM FIXTURE 0011300000 42.00 FIXTURE WITH COLOR CORRECTION 0.00 0.00 269.00 2.00 55.00 214.00 Unit values \$0 \$11,298 \$0 Totals 84.00 \$8,988 \$2,310 2X4 3-32 WATT FLUORESCENT LAMPS, SURFACE 0011400000

MOUNTED WITH REFLECTOR

10.00 FIXTURE

02-Feb-95			MeansD	ata for Lot	Page 2			
	Unit values Totals	1.51 15.10	79.00 \$790	41.50 \$415	0.00	0.00	120.50 \$1,205	
	0011500000	1X4 4-32 MOUNTED	WATT FLUO	RESCENT LAM	IPS, PENDANT	58.00	FIXTURE	
	Unit values Totals	1.14 66.12	49.00 \$2,842	31.50 \$1,827	0.00 \$0	0.00	80.50 \$4,669	

EQUIPT MARKUP

TOTAL BEFORE CONTINGENC

SUB MARKUP

BOND

PROFIT

JOB TOTAL

CONTINGENCY

0.00%

0.00%

5.00%

5.00%

10.00%

Description ______ Manhours Matl Labor Equipment Sub ________ 350 \$15,785 \$9,612 \$0 \$0 \$25,397 UOO ESTIMATE TOTAL 350 \$15,785 \$9,612 \$0 \$0 \$25,397 SALES TAX 5.00% \$789 MATL MARKUP 0.00% \$0 LABOR MARKUP 0.00% \$0

\$16,574 \$9,612

\$0

\$0

\$0

\$0

\$26,186 \$1,309 \$1,309

\$2,619

\$31,424

Estimate: LIGHTING UPGRADE Date: Description: LIGHTING PRODUCT UPGRADE

FEBRUARY 2, 1995

HANGAR LIGHTING Bid Date: FEBRUARY 2, 1995

Project: Location:

BLDG 3962 Job #:

94013.04

Sq. footage:

City indx: Raleigh, NC

bq. rootage.						
	Manhours	Matl	Labor	Equipment	Sub	Total
U00	350	\$15,785	\$9,612	\$0	\$0	\$25,397
TOTAL	350	\$15,785	\$9,612	\$0	\$0	\$25,397
SALES TAX	5.00%	\$789				
MATL MARKUP LABOR MARKUP	0.00%	\$0	\$0			
EQUIPT MARKUP SUB MARKUP	0.00% 0.00%			\$0	\$0	
TOTAL BEFORE (CONTINGENCY BOND PROFIT	CONTINGENC 5.00% 5.00% 10.00%	\$16,574	\$9,612	\$0	\$0	\$26,186 \$1,309 \$1,309 \$2,619
JOB TOTAL						\$31,424

Estimate: BLDG 3962 Date: FEBRUARY 2, 1995
Description: CONVENTIONAL SKYLIGHT & CONTROLS
Project: HANGAR STUDY Bid Date: FEBRUARY 2, 1995
Location: BLDG 3962 Job #: 94013.04
Sq. footage: City indx:Raleigh, NC

Line #	Description					
	Manhours	Matl	Labor	Equipment	Sub	Total

0060000001	CONVENTION	NAL SKYLIG	HT WITH 4"	INSULATED	CURBS		
	(DOUBLE PA	ANED)			450.00	SQ. FT	
Unit values	0.00	19.56	2.41	0.09	0.00	22.06	
Totals	0.00	\$8,802	\$1,085	\$41	\$0	\$9,928	
U00	0	\$8,802	\$1,085	\$41	\$0	\$9,928	
		v - v	T - /	T	4.4	42,220	

Line #	Description	on				
	Manhours	Matl	Labor	Equipment	Sub	Total
1611350023	LOW VOLTA	GE WIRE #3	18-4C		10.00	CLE
Unit values Totals	1.23 12.30	15.40 \$154	34.00 \$340	0.00 \$0	0.00	49.40 \$494
1611750101	LIGHTING (CONTACTOR				
Unit values Totals	2.00 6.00	137.00 \$411	55.00 \$165	0.00	3.00 0.00 \$0	EA. 192.00 \$576
1611850101	PHOTO SWIT	гсн 50-500	FC ADJU	STABLE		
Unit values Totals	1.00 4.00	290.00 \$1,160	27.50 \$110	0.00 \$0	4.00 0.00 \$0	EA. 317.50 \$1,270
1611870101	LOW VOLTA	SE TRANS 1	15V-24V			
Unit values Totals	0.67 0.67	64.00 \$64	18.35 \$18	0.00	1.00 0.00 \$0	EA. 82.35 \$82
1611870102	SWITCHING	RELAYS				
Unit values Totals	0.50 4.00	11.30 \$90	13.75 \$110	0.00	8.00 0.00 \$0	EA. 25.05 \$200
1611950101	1/2" EMT					
Unit values Totals	0.05 17.00	0.38 \$129	1.29 \$439	0.00 \$0	340.00 0.00 \$0	LF 1.67 \$568
U16 ELECTRICAL	44	\$2,008	\$1,182	\$0	\$0	\$3,190

Line #	Descripti	on				
	Manhours	Matl	Labor	Equipment	Sub	Total
=======================================						
ESTIMATE TOTAL	44	\$10,810	\$2,267	\$41	\$0	\$13,118
SALES TAX MATL MARKUP LABOR MARKUP	5.00% 0.00% 0.00%	\$541 \$0	\$0			
EQUIPT MARKUP SUB MARKUP	0.00%		Ç	\$0	\$0	
TOTAL BEFORE COCONTINGENCY BOND PROFIT	ONTINGENC 5.00% 5.00% 10.00%	\$11,351	\$2,267	\$41	\$0	\$13,659 \$683 \$683 \$1,366
JOB TOTAL						\$16,390

______ Estimate: BLDG 3962 Date: FEBRUARY 2, 1995
Description: CONVENTIONAL SKYLIGHT & CONTROLS
Project: HANGAR STUDY Bid Date: FEBRUARY 2, 1995
Location: BLDG 3962 Job #: 94013.04
Sq. footage: City indx:Raleigh, NC

SUMMARY						
	Manhours	Matl	Labor	Equipment	Sub	Total
=======================================	=======		========	# = # # # # # # # #		
U00 U16 ELECTRICAL	0 44	\$8,802 \$2,008	\$1,085 \$1,182	\$41 \$0	\$0 \$0	\$9,928 \$3,190
TOTAL	44	\$10,810	\$2,267	\$41	\$0	\$13,118
SALES TAX MATL MARKUP LABOR MARKUP	5.00% 0.00% 0.00%	\$541 \$0	\$0	•		
EQUIPT MARKUP SUB MARKUP	0.00% 0.00%			\$0	\$0	
TOTAL BEFORE CO CONTINGENCY BOND PROFIT	ONTINGENC 5.00% 5.00% 10.00%	\$11,351	\$2,267	\$41	\$0	\$13,659 \$683 \$683 \$1,366
JOB TOTAL						\$16,390

LIFE CYCLE COST ANALYSIS SUMMARY STUDY: 4137
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID FY95 (92) INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3 PROJECT NO. & TITLE: 4137 SKY LIGHTS & LIGHTING PRODUCTS @ HANGARS FISCAL YEAR 95 DISCRETE PORTION NAME: LIGHTING ANALYSIS DATE: 02-03-95 ECONOMIC LIFE 10 YEARS PREPARED BY: JAH 1. INVESTMENT A. CONSTRUCTION COST \$ 37287. B. SIOH \$
C. DESIGN COST \$ 1864. 1864. D. TOTAL COST (1A+1B+1C) \$ 41016. E. SALVAGE VALUE OF EXISTING EQUIPMENT \$ F. PUBLIC UTILITY COMPANY REBATE \$ G. TOTAL INVESTMENT (1D - 1E - 1F) 41016. 2. ENERGY SAVINGS (+) / COST (-) DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993 UNIT COST SAVINGS ANNUAL \$ DISCOUNT DISCOUNTED \$/ MWH(1) MWH/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5) FUEL. 45718. 0. \$ 0. \$ 0. \$ 0. \$ 53198. D. NAT G \$.00
E. COAL \$.00
F. LPG \$.00
M. DEMAND 98916. 3. NON ENERGY SAVINGS(+) / COST(-) \$ 619. 8.49 A. ANNUAL RECURRING (+/-) (1) DISCOUNT FACTOR (TABLE A) (2) DISCOUNTED SAVING/COST (3A X 3A1) \$ 5255. B. NON RECURRING SAVINGS(+) / COSTS(-) SAVINGS(+) YR DISCNT DISCOUNTED

COST(-) OC FACTR SAVINGS(+)/

(1) (2) (3) COST(-)(4) ITEM d. TOTAL \$ 0. C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)\$ 5255. 4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))\$ 12098. 5. SIMPLE PAYBACK PERIOD (1G/4) 3.39 YEARS 6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) \$ 104171. 7. SAVINGS TO INVESTMENT RATIO (SIR) = (6 / 1G) =2.54 (IF < 1 PROJECT DOES NOT QUALIFY) 8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): 13.17 %

14,283 KWH/YR 0 WATTS 0 WATTS 0 WATTS 3,828 WATTS **750 WATTS** Ž (4' FLUORESCENT LAMPS) \$262 MR \$519 MR 4.58 OF HANGAR FACILITIES AT SIMMONS ARMY AIRFIELD PER KWH PER KW 58 W/FIXT = 87 W/FIXT = 118 W/FIXT = 58 W/FIXT = 125 W/FIXT = NET DEMAND SAVINGS NET DOLLAR SAVINGS \$0.03495 FORT BRAGG LIMITED ENERGY STUDY REPLACEMENT FIXTURE DATA \$0 / YEAR ECO ENERGY CONSUMPTION INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT 0 2 LAMP U @ 66 2 LAMP @ 0 3 LAMP @ 0 4 LAMP @ ELECTRIC COSTS ENERGY CHARGE DEMAND CHARGE 6 2 LAMP @ ECO 1: INTERIOR / EXTERIOR LIGHTING 16 DECEMBER 1994 \$0 MEAR ECO DEMAND MAINTENANCE SAVINGS HRMR = 2 FOOT **4 FOOT** 21,640 KWH/YR 7,357 KWH/YR Ş **NET MAINTENANCE SAVINGS** 6.94 \$5.00 / 20,000 HOURS • 6,072 WATTS 0 WATTS 0 WATTS 0 WATTS 864 WATTS 92 W/FIXT = 137 W/FIXT = 184 W/FIXT = 92 W/FIXT = 144 W/FIXT = BUILDING #: 4137 - HANGAR BASELINE ENERGY CONSUMPTION **NET ENERGY SAVINGS** 5 2 LAMPS @ EXISTING FIXTURE DATA 2 LAMP U@ AREA USE: HOURS/DAY DAYS/WEEK BASELINE DEMAND 66 2 LAMP @ 3 LAMP @ 4 LAMP @ 6 2 LAMP @ 4 F00T 2 F001 8 FOOT

67,392 KWH/YR 0 WATTS 0 WATTS 21,600 WATTS 0 WATTS Ž \$3,330 MR \$6,601 MR 21.60 (MERCURY VAPOR) (METAL HALIDE) OF HANGAR FACILITIES AT SIMMONS ARMY AIRFIELD PER KWH PER KW WATTS = WATTS = WATTS = WATTS = NET DEMAND SAVINGS NET DOLLAR SAVINGS FORT BRAGG LIMITED ENERGY STUDY \$0.03495 450 REPLACEMENT FIXTURE DATA \$437 / YEAR \$352 / YEAR ECO ENERGY CONSUMPTION ELECTRIC COSTS: ENERGY CHARGE DEMAND CHARGE INTERIOR LIGHTING: LIGHTING REPLACEMENT **ECO 1: INTERIOR / EXTERIOR LIGHTING** \$85 MEAR ECO DEMAND MAINTENANCE SAVINGS 00000 3,120 HR/YR = 3,120 HR/YR = **16 DECEMBER 1994** 160,992 KWH/YR 93,600 KWH/YR 51.60 KW **NET MAINTENANCE SAVINGS** \$70.00 / 24,000 HOURS • \$47.00 / 20,000 HOURS • 0 WATTS 0 WATTS 0 WATTS 51,600 WATTS 0 WATTS 12 5 1 (1-YES, 0-NO) 1075 WATTS = WATTS = WATTS = WATTS = BUILDING #: 4137 - HANGAR BASELINE ENERGY CONSUMPTION **NET ENERGY SAVINGS** 48 LAMPS @ 48 LAMPS @ EXISTING FIXTURE DATA INCAND @ QUARTZ @ QUARTZ @ AREA USE: HOURS/DAY BASELINE DEMAND DAYSWEEK PEAK USE @@ } } 48

1,348 KWH/YR 26 WATTS 0 WATTS 0 WATTS 406 WATTS (COMPACT FLUORESCENT) (4' FLUORESCENT LAMPS) ž \$276 MR \$547 MR 0.43 (INCANDESCENT) (INCANDESCENT) 0 LAMPS @ 13 W/FIXT = 2 LAMPS @ 13 W/FIXT = 6 LAMPS @ 18 W/FIXT = 6 LAMPS @ 26 W/FIXT = 7 2 LAMP @ 58 W/FIXT = 7 (FOUR FOOT FLÜGRESCENT FIXTURE) OF HANGAR FACILITIES AT SIMMONS ARMY AIRFIELD PER KWH PER KW COMPACT FLUORESCENT REPLACEMENT **NET DEMAND SAVINGS** NET DOLLAR SAVINGS FORT BRAGG LIMITED ENERGY STUDY \$0.03495 \$29 / YEAR \$306 / YEAR \$1 / YEAR \$11 / YEAR ECO ENERGY CONSUMPTION INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT 0 LAMPS @ 2 LAMPS @ 0 LAMPS @ 0 LAMPS @ 7 2 LAMP @ 0 ELECTRIC COSTS ENERGY CHARGE DEMAND CHARGE **ECO 1: INTERIOR / EXTERIOR LIGHTING** \$323 NEAR ECO DEMAND MAINTENANCE SAVINGS 3,120 HR/YR = 3,120 HR/YR = 3,120 HR/YR = 3,120 HR/YR = **16 DECEMBER 1994** KWH/YR 7,763 KWH/YR ž **NET MAINTENANCE SAVINGS** \$3.50 / 750 HOURS • \$5.25 / 750 HOURS • \$2.00 / 10,000 HOURS • \$5.00 / 20,000 HOURS • 9,110 2.92 120 WATTS 0 WATTS 0 WATTS 2,800 WATTS 0 WATTS 12 5 1 (1-YES, 0-NO) 52 W/FIXT = 60 W/FIXT = 75 W/FIXT = 90 W/FIXT = 200 W/FIXT = 700 W/FIX BUILDING #: 4137 - HANGAR BASELINE ENERGY CONSUMPTION **NET ENERGY SAVINGS** 2 LAMPS @ 14 LAMPS @ 2 LAMPS @ 14 LAMPS @ EXISTING INCANDESCENTS LAMPS @ LAMPS BASELINE DEMAND AREA USE: HOURS/DAY DAYSWEEK PEAK USE 14

KWH/YR 21.6 KW \$2,398 MR \$3,811 MR (WITHOUT SKYLIGHTS) (WITH SKYLIGHTS) 26,957 OF HANGAR FACILITIES AT SIMMONS ARMY AIRFIELD PER KWH PER KW NET DEMAND SAVINGS NET DOLLAR SAVINGS \$0.03495 FORT BRAGG LIMITED ENERGY STUDY 1,248 \$352 / YEAR \$141 / YEAR ECO ENERGY CONSUMPTION REVISED USAGE: HOURS/YEAR ELECTRIC COSTS ENERGY CHARGE DEMAND CHARGE ECO 1: INTERIOR / EXTERIOR LIGHTING 02 FEBRUARY 1995 CONVENTIONAL SKY LIGHTS IN HANGARS \$211 NEAR **ECO DEMAND** MAINTENANCE SAVINGS 3,120 HR/YR = 1,248 HR/YR = 67,392 KWH/YR 40,435 KWH/YR Ş **NET MAINTENANCE SAVINGS** 21.6 \$47.00 / 20,000 HOURS * \$47.00 / 20,000 HOURS * 21,600 W 1 (1-YES, 0-NO) 3,120 BUILDING #: 4137 - HANGAR **NET ENERGY SAVINGS** BASELINE ENERGY CONSUMPTION 48 LAMPS @__48 LAMPS @_ WATTAGE CONTROLLED: CURRENT USAGE: HOURS/YEAR **BASELINE DEMAND**

Unit values

Totals

LIGHTING UPGRADE Date: FEBRUARY 2, 1995 Estimate: LIGHTING PRODUCT UPGRADE Description: Bid Date: FEBRUARY 2, 1995 HANGAR LIGHTING Project: Job #: 94013.04 BLDG 4137 Location: City indx:Raleigh, NC Sq. footage: Description Line # Manhours Matl Labor Equipment Sub ______ 0002010000 DEMOLITION, INCANDESCENT FIXTURES/EXIT SIGNS 16.00 FIXTURE 0.00 Unit values 0.26 0.00 7.10 0.00 7.10 4.16 \$0 \$114 \$0 \$0 Totals \$114 0002020000 DEMOLITION, 1X4 FLUORESCENT FIXTURES 72.00 FIXTURE 0.00 0.00 13.35 Unit values 0.49 0.00 13.35 Totals 35.28 \$0 \$961 \$0 \$0 \$961 DEMOLITION, HIGH BAY FIXTURES 0002030000 48.00 FIXTURE 1.00 0.00 0.00 Unit values 27.50 0.00 27.50 \$0 \$1,320 \$0 \$0 \$1,320 Totals 48.00 1X4 2-32 WATT FLUORESCENT LAMPS, SURFACE 0010000000 7.00 FIXTURE MOUNTED Unit values 1.14 60.00 31.50 0.00 0.00 91.50 \$420 \$221 \$0 \$641 Totals 7.98 \$0 0010400000 1X4 2-32 WATT FLUORESCENT LAMPS, PENDANT MOUNTED 66.00 FIXTURE Unit values 39.00 31.50 0.00 0.00 1.14 70.50 Totals 75.24 \$2,574 \$2,079 \$0 \$0 \$4,653 0010600000 1X8 2-59 WATT FLUORESCENT LAMPS, PENDANT 6.00 FIXTURE MOUNTED Unit values 1.75 131.00 48.12 0.00 0.00 179.12 \$786 \$289 \$0 \$0 \$1,075 Totals 10.50 400 WATT METAL HALIDE FIXTURE 0011000000 48.00 FIXTURE 207.00 55.00 0.00 0.00 Unit values 2.00 262.00 96.00 \$9,936 \$2,640 \$0 \$0 Totals \$12,576

13 WATT COMPACT FLUORESCENT FIXTURE

25.50

\$51

3.44

\$7

0.00

\$0

GLOBE ASSEMBLY

0.13

0.26

28.94

\$58

2.00 FIXTURE

0.00

\$0

Line #	Descripti	on				
	Manhours	Matl	Labor	Equipment	Sub	Total
U00	278	\$13,767	\$7,631	\$0	\$0	\$21,398
ESTIMATE TOTAL	278	\$13,767	\$7,631	\$0	\$0	\$21,398
SALES TAX MATL MARKUP LABOR MARKUP EQUIPT MARKUP SUB MARKUP	5.00% 0.00% 0.00% 0.00% 0.00%	\$688 \$0	\$0	\$0	\$0	
TOTAL BEFORE C CONTINGENCY BOND PROFIT	ONTINGENC 5.00% 5.00% 10.00%	\$14,455	\$7,631	\$0	\$0	\$22,086 \$1,104 \$1,104 \$2,209
JOB TOTAL						\$26,504

________ Estimate: LIGHTING UPGRADE Date: FEBRUARY 2, 1995
Description: LIGHTING PRODUCT UPGRADE
Project: HANGAR LIGHTING Bid Date: FEBRUARY 2, 1995
Location: BLDG 4137 Job #: 94013.04

Sq. footage:

City indx:Raleigh, NC

	======== S	UMMARY				
	Manhours	Matl	Labor	Equipment	Sub	Total
=======================================	_=======			========		
U00	278	\$13,767	\$7,631	\$0	\$0	\$21,398
TOTAL	278	\$13,767	\$7,631	\$0	\$0	\$21,398
SALES TAX MATL MARKUP	5.00% 0.00%	\$688 \$0				
LABOR MARKUP EQUIPT MARKUP	0.00%	Ų O	\$0	\$0		
SUB MARKUP	0.00%			Şū	\$0	
TOTAL BEFORE CONTINGENCY	CONTINGENC 5.00%	\$14,455	\$7,631	\$0	\$0	\$22,086 \$1,104
BOND PROFIT	5.00% 10.00%					\$1,104 \$1,104 \$2,209
	10.00%					
JOB TOTAL						\$26,504

0 \$5,868 \$723 \$27 \$0 \$6,618

UOO

Estimate: BLDG 4137 Date: FEBRUARY 2, 1995
Description: CONVENTIONAL SKYLIGHT & CONTROLS
Project: HANGAR STUDY Bid Date: FEBRUARY 2, 1995
Location: BLDG 4137 Job #: 94013.04
Sq. footage: City indx:Raleigh, NC

Line #	Descriptio	n				
	Manhours	Matl	Labor E	quipment	Sub	Total
0060000001	CONVENTION (DOUBLE PA		HT WITH 4"	INSULATED		SQ. FT
Unit values Totals	0.00	19.56 \$5,868	2.41 \$723	0.09 \$27	0.00 \$0	22.06 \$6,618

Manhours Math Labor Equipment Sub Total	Line #	Description	on				
Unit values 1.23 15.40 34.00 0.00 0.00 49.40 Totals 6.15 \$77 \$170 \$0 \$0 \$0 \$247 1611750101 LIGHTING CONTACTOR Unit values 2.00 137.00 55.00 0.00 0.00 192.00 Totals 4.00 \$274 \$110 \$0 \$0 \$0 \$384 1611850101 PHOTO SWITCH 50-500 FC ADJUSTABLE Unit values 1.00 290.00 27.50 0.00 0.00 317.50 Totals 2.00 \$580 \$55 \$0 \$0 \$635 1611870101 LOW VOLTAGE TRANS 115V-24V Unit values 0.67 64.00 18.35 0.00 0.00 82.35 Totals 0.67 \$64 \$18 \$0 \$0 \$82 1611870102 SWITCHING RELAYS Unit values 0.50 11.30 13.75 0.00 0.00 25.05 Totals 2.00 \$45 \$55 \$0 \$0 \$100 1611950101 1/2" EMT Unit values 0.05 0.38 1.29 0.00 0.00 LF 0.00 1.67		Manhours	Matl	Labor	Equipment	Sub	Total
Unit values 1.23 15.40 34.00 0.00 0.00 49.40 Totals 6.15 \$77 \$170 \$0 \$0 \$0 \$247 1611750101 LIGHTING CONTACTOR Unit values 2.00 137.00 55.00 0.00 0.00 192.00 Totals 4.00 \$274 \$110 \$0 \$0 \$0 \$384 1611850101 PHOTO SWITCH 50-500 FC ADJUSTABLE Unit values 1.00 290.00 27.50 0.00 0.00 317.50 Totals 2.00 \$580 \$55 \$0 \$0 \$635 1611870101 LOW VOLTAGE TRANS 115V-24V Unit values 0.67 64.00 18.35 0.00 0.00 82.35 Totals 0.67 \$64 \$18 \$0 \$0 \$82 1611870102 SWITCHING RELAYS Unit values 0.50 11.30 13.75 0.00 0.00 25.05 Totals 2.00 \$45 \$55 \$0 \$0 \$100 1611950101 1/2" EMT Unit values 0.05 0.38 1.29 0.00 0.00 LF 0.00 1.67		=======================================					
Unit values 1.23 15.40 34.00 0.00 0.00 49.40 Totals 6.15 \$77 \$170 \$0 \$0 \$0 \$247 1611750101 LIGHTING CONTACTOR Unit values 2.00 137.00 55.00 0.00 0.00 192.00 Totals 4.00 \$274 \$110 \$0 \$0 \$384 1611850101 PHOTO SWITCH 50-500 FC ADJUSTABLE Unit values 1.00 290.00 27.50 0.00 0.00 317.50 Totals 2.00 \$580 \$55 \$0 \$0 \$635 1611870101 LOW VOLTAGE TRANS 115V-24V Unit values 0.67 64.00 18.35 0.00 0.00 82.35 Totals 0.67 \$64 \$18 \$0 \$0 \$82 1611870102 SWITCHING RELAYS Unit values 0.50 11.30 13.75 0.00 0.00 \$82 Totals 2.00 \$45 \$55 \$0 \$0 \$0 \$100 1611950101 1/2" EMT Unit values 0.05 0.38 1.29 0.00 0.00 LF Unit values 0.05 0.38 1.29 0.00 0.00 1.67	1611350023	LOW VOLTA	GE WIRE #1	18-4C		F 00	61 D
Totals 6.15 \$77 \$170 \$0 \$0 \$247 1611750101 LIGHTING CONTACTOR Unit values 2.00 137.00 55.00 0.00 0.00 192.00 70tals 4.00 \$274 \$110 \$0 \$0 \$384 1611850101 PHOTO SWITCH 50-500 FC ADJUSTABLE Unit values 1.00 290.00 27.50 0.00 0.00 317.50 70tals 2.00 \$580 \$55 \$0 \$0 \$635 1611870101 LOW VOLTAGE TRANS 115V-24V Unit values 0.67 64.00 18.35 0.00 0.00 82.35 70tals 0.67 \$64 \$18 \$0 \$0 \$82 1611870102 SWITCHING RELAYS Unit values 0.50 11.30 13.75 0.00 0.00 EA. Unit values 0.50 \$45 \$55 \$0 \$0 \$340.00 EA. Unit values 0.50 \$11.30 \$13.75 0.00 0.00 \$25.05 70tals 2.00 \$45 \$55 \$0 \$0 \$340.00 LF Unit values 0.50 0.38 1.29 0.00 0.00 1.67	The second second	1 22	15 40	24 00	0.00		
Unit values 2.00 137.00 55.00 0.00 0.00 192.00 Totals 4.00 \$274 \$110 \$0 \$0 \$0 \$192.00 \$384 \$1611850101 PHOTO SWITCH 50-500 FC ADJUSTABLE Unit values 1.00 290.00 27.50 0.00 0.00 317.50 Totals 2.00 \$580 \$55 \$0 \$0 \$635 \$1611870101 LOW VOLTAGE TRANS 115V-24V							
Unit values 2.00 137.00 55.00 0.00 0.00 192.00 70tals 4.00 \$274 \$110 \$0 \$0 \$0 \$384 1611850101 PHOTO SWITCH 50-500 FC ADJUSTABLE Unit values 1.00 290.00 27.50 0.00 0.00 317.50 70tals 2.00 \$580 \$55 \$0 \$0 \$0 \$635 1611870101 LOW VOLTAGE TRANS 115V-24V Unit values 0.67 64.00 18.35 0.00 0.00 82.35 70tals 0.67 \$64 \$18 \$0 \$0 \$0 \$82.35 1611870102 SWITCHING RELAYS Unit values 0.50 11.30 13.75 0.00 0.00 25.05 70tals 2.00 \$45 \$55 \$0 \$0 \$0 \$100 1611950101 1/2" EMT Unit values 0.05 0.38 1.29 0.00 0.00 1.67	1611750101	LIGHTING (CONTACTOR				
Totals 4.00 \$274 \$110 \$0 \$0 \$384 1611850101 PHOTO SWITCH 50-500 FC ADJUSTABLE Unit values 1.00 290.00 27.50 0.00 0.00 317.50 Totals 2.00 \$580 \$55 \$0 \$0 \$635 1611870101 LOW VOLTAGE TRANS 115V-24V Unit values 0.67 64.00 18.35 0.00 0.00 \$82.35 Totals 0.67 \$64 \$18 \$0 \$0 \$0 \$82 1611870102 SWITCHING RELAYS Unit values 0.50 11.30 13.75 0.00 0.00 25.05 Totals 2.00 \$45 \$55 \$0 \$0 \$100 1611950101 1/2" EMT Unit values 0.05 0.38 1.29 0.00 0.00 1.67							
1611850101 PHOTO SWITCH 50-500 FC ADJUSTABLE Unit values							
Unit values 1.00 290.00 27.50 0.00 0.00 317.50 Totals 2.00 \$580 \$55 \$0 \$0 \$0 \$635 1611870101 LOW VOLTAGE TRANS 115V-24V Unit values 0.67 64.00 18.35 0.00 0.00 82.35 Totals 0.67 \$64 \$18 \$0 \$0 \$0 \$82 1611870102 SWITCHING RELAYS Unit values 0.50 11.30 13.75 0.00 0.00 25.05 Totals 2.00 \$45 \$55 \$0 \$0 \$100 1611950101 1/2" EMT Unit values 0.05 0.38 1.29 0.00 0.00 1.67	Totals	4.00	\$274	\$110	\$0	\$0	\$384
Unit values 1.00 290.00 27.50 0.00 0.00 317.50 Totals 2.00 \$580 \$55 \$0 \$0 \$0 \$635 1611870101 LOW VOLTAGE TRANS 115V-24V Unit values 0.67 64.00 18.35 0.00 0.00 82.35 Totals 0.67 \$64 \$18 \$0 \$0 \$0 \$82 1611870102 SWITCHING RELAYS Unit values 0.50 11.30 13.75 0.00 0.00 25.05 Totals 2.00 \$45 \$55 \$0 \$0 \$100 1611950101 1/2" EMT Unit values 0.05 0.38 1.29 0.00 0.00 1.67	1611850101	PHOTO SWIT	CH 50-500	FC ADJU	STABLE		
Totals 2.00 \$580 \$55 \$0 \$0 \$635 1611870101 LOW VOLTAGE TRANS 115V-24V Unit values 0.67 64.00 18.35 0.00 0.00 82.35 Totals 0.67 \$64 \$18 \$0 \$0 \$0 \$82 1611870102 SWITCHING RELAYS Unit values 0.50 11.30 13.75 0.00 0.00 25.05 Totals 2.00 \$45 \$55 \$0 \$0 \$100 1611950101 1/2" EMT Unit values 0.05 0.38 1.29 0.00 0.00 1.67	** *						
1611870101 LOW VOLTAGE TRANS 115V-24V Unit values							
Unit values 0.67 64.00 18.35 0.00 0.00 82.35 Totals 0.67 \$64 \$18 \$0 \$0 \$0 \$82 \$18 \$0 \$0 \$0 \$82 \$18 \$0 \$0 \$0 \$1.00	Totals	2.00	\$580	\$55	\$0	\$0	\$635
Unit values 0.67 64.00 18.35 0.00 0.00 82.35 Totals 0.67 \$64 \$18 \$0 \$0 \$0 \$82 \$18 \$18 \$18 \$18 \$18 \$18 \$18 \$18 \$18 \$18	1611870101	LOW VOLTAC	SE TRANS	L15V-24V			
Totals 0.67 \$64 \$18 \$0 \$0 \$0 \$82 1611870102 SWITCHING RELAYS Unit values 0.50 11.30 13.75 0.00 0.00 25.05 Totals 2.00 \$45 \$55 \$0 \$0 \$100 1611950101 1/2" EMT Unit values 0.05 0.38 1.29 0.00 0.00 1.67							
1611870102 SWITCHING RELAYS Unit values 0.50 11.30 13.75 0.00 0.00 25.05 70tals 2.00 \$45 \$55 \$0 \$0 \$100 1611950101 1/2" EMT Unit values 0.05 0.38 1.29 0.00 0.00 1.67							
Unit values 0.50 11.30 13.75 0.00 0.00 25.05 Totals 2.00 \$45 \$55 \$0 \$0 \$100 LF Unit values 0.05 0.38 1.29 0.00 0.00 1.67	Totals	0.67	\$64	\$18	\$0	\$0	\$82
Unit values 0.50 11.30 13.75 0.00 0.00 25.05 Totals 2.00 \$45 \$55 \$0 \$0 \$100 1611950101 1/2" EMT Unit values 0.05 0.38 1.29 0.00 0.00 1.67	1611870102	SWITCHING	RELAYS				
Totals 2.00 \$45 \$55 \$0 \$0 \$100 1611950101 1/2" EMT Unit values 0.05 0.38 1.29 0.00 0.00 1.67							
1611950101 1/2" EMT Unit values 0.05 0.38 1.29 0.00 0.00 1.67							
Unit values 0.05 0.38 1.29 0.00 0.00 1.67	Totals	2.00	\$45	\$55	\$0	\$0	\$100
Unit values 0.05 0.38 1.29 0.00 0.00 1.67	1611950101	1/2" EMT					
		•					
Totals 17.00 \$129 \$439 \$0 \$0 \$568							
17.00 \$127 \$137 \$0 \$0 \$300	Totals	17.00	\$129	\$439	\$0	\$0	\$568
U16 ELECTRICAL 32 \$1,169 \$847 \$0 \$0 \$2,016	U16 ELECTRICAL	32	\$1,169	\$847	\$0	\$0	\$2,016

Line #	Description	on				
	Manhours	Matl	Labor	Equipment	Sub	Total
ESTIMATE TOTAL	32	\$7,037	\$1,570	\$27	\$0	\$8,634
SALES TAX MATL MARKUP LABOR MARKUP EQUIPT MARKUP	5.00% 0.00% 0.00% 0.00%	\$352 \$0	\$0	40		
SUB MARKUP	0.00%			\$0	\$0	
TOTAL BEFORE CONTINGENCY BOND PROFIT	ONTINGENC 5.00% 5.00% 10.00%	\$7,389	\$1,570	\$27	\$0	\$8,986 \$449 \$449 \$899
JOB TOTAL						\$10,783

_______ Estimate: BLDG 4137 Date: FEBRUARY 2, 1995
Description: CONVENTIONAL SKYLIGHT & CONTROLS
Project: HANGAR STUDY Bid Date: FEBRUARY 2, 1995
Location: BLDG 4137 Job #: 94013.04
Sq. footage: City indx:Raleigh, NC

JOB TOTAL

- 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1						
_ =====================================						
	Manhours	Matl	Labor	Equipment	Sub	Total
U00 U16 ELECTRICAL	0 32	\$5,868 \$1,169	\$723 \$847	\$27 \$0	\$0 \$0	\$6,618 \$2,016
TOTAL	32	\$7,037	\$1,570	\$27	\$0	\$8,634
SALES TAX MATL MARKUP LABOR MARKUP	5.00% 0.00% 0.00%	\$352 \$0	\$0	40		
EQUIPT MARKUP SUB MARKUP	0.00% 0.00%			\$0	\$0	
TOTAL BEFORE CO CONTINGENCY BOND PROFIT	0NTINGENC 5.00% 5.00% 10.00%	\$7,389	\$1,570	\$27	\$0	\$8,986 \$449 \$449 \$899

\$10,783

LIFE CYCLE COST ANALYSIS SUMMARY STUDY: 4242
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID FY95 (92) INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3 PROJECT NO. & TITLE: 4242 SKY LIGHTS & LIGHTING PRODUCTS @ HANGARS FISCAL YEAR 95 DISCRETE PORTION NAME: LIGHTING ANALYSIS DATE: 02-03-95 ECONOMIC LIFE 10 YEARS PREPARED BY: JAH 1. INVESTMENT A. CONSTRUCTION COST \$ 19722. 986. B. SIOH
C. DESIGN COST 986. D. TOTAL COST (1A+1B+1C) \$ 21694. E. SALVAGE VALUE OF EXISTING EQUIPMENT \$ 0. F. PUBLIC UTILITY COMPANY REBATE G. TOTAL INVESTMENT (1D - 1E - 1F) 21694. 2. ENERGY SAVINGS (+) / COST (-) DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993 UNIT COST SAVINGS ANNUAL \$ DISCOUNT \$/ MWH(1) MWH/YR(2) SAVINGS(3) FACTOR(4) DISCOUNTED FUEL SAVINGS(5) 42. 0. 0. 0. 0. \$ 1476. \$ 0. \$ 0. \$ 0. \$ 0. \$ 2283. \$ 3759. A. ELECT \$ 34.95 8.77 12946. B. DIST \$.00 9.26 0. C. RESID \$.00 10.08 0. D. NAT G \$.00 0. 10.39 .00 E. COAL \$ 9.39 0. F. LPG \$.00 8.78 19383. M. DEMAND SAVINGS 8.49 N. TOTAL 42. 32329. 3. NON ENERGY SAVINGS(+) / COST(-) A. ANNUAL RECURRING (+/-) \$ 1581. (1) DISCOUNT FACTOR (TABLE A) 8.49 (2) DISCOUNTED SAVING/COST (3A X 3A1) 13423. B. NON RECURRING SAVINGS(+) / COSTS(-) SAVINGS(+) YR DISCNT DISCOUNTED
COST(-) OC FACTR SAVINGS(+),
(1) (2) (3) COST(-)(4) ITEM SAVINGS(+)/ d. TOTAL \$ 0. C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)\$ 13423. 4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))\$ 5340. 5. SIMPLE PAYBACK PERIOD (1G/4) 4.06 YEARS 6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) \$ 45751. 7. SAVINGS TO INVESTMENT RATIO (SIR) = (6 / 1G) =2.11 (IF < 1 PROJECT DOES NOT OUALIFY) 8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): 11.09 %

NET MAINTENANCE SAVINGS \$18 IYEAR

28,080 KWH/YR 0 WATTS 0 WATTS 0 WATTS 10,800 WATTS 0 WATTS K \$799 NR \$1,453 MR 10.80 (INCANDSCENT) (METAL HALIDE) OF HANGAR FACILITIES AT SIMMONS ARMY AIRFIELD PER KWH PER KW 450 WATTS = WATTS = WATTS = WATTS = WATTS = **NET DEMAND SAVINGS NET DOLLAR SAVINGS** FORT BRAGG LIMITED ENERGY STUDY \$0.03495 REPLACEMENT FIXTURE DATA \$1,622 / YEAR \$147 / YEAR ECO ENERGY CONSUMPTION ELECTRIC COSTS; ENERGY CHARGE DEMAND CHARGE INTERIOR LIGHTING: LIGHTING REPLACEMENT **ECO 1: INTERIOR / EXTERIOR LIGHTING** \$1,475 MEAR ECO DEMAND MAINTENANCE SAVINGS 20000 2,600 HR/YR = 2,600 HR/YR = **16 DECEMBER 1994** 46,800 KWH/YR 18,720 KWH/YR Κ¥ **NET MAINTENANCE SAVINGS** 18.00 \$26.00 / 1,000 HOURS * \$47.00 / 20,000 HOURS * 0 WATTS 0 WATTS 18,000 WATTS 0 WATTS 0 WATTS 10 5 1 (1-YES, 0-NO) 750 WATTS = WATTS = WATTS = WATTS = WATTS = BUILDING #: 4242 - HANGAR BASELINE ENERGY CONSUMPTION **NET ENERGY SAVINGS** 24 LAMPS @ 24 LAMPS @ EXISTING FIXTURE DATA INCAND @ QUARTZ @ QUARTZ @ AREA USE: BASELINE DEMAND DAYSWEEK PEAK USE **HOURS/DAY** 54

FORT BRAGG LIMITED ENERGY STUDY OF HANGAR FACILITIES AT SIMMONS ARMY AIRFIELD ECO 1: INTERIOR / EXTERIOR LIGHTING 02 FEBRUARY 1995	ENERGY STUDY SIMMONS ARMY AIRFIELD TERIOR LIGHTING RY 1995
CONVENTIONAL SKY LIGHTS IN HANGARS	GHTS IN HANGARS
BUILDING #: 4242 - HANGAR	
WATTAGE CONTROLLED: 10,800 W PEAK USE: 1 (1-YES, 0-NO)	DEMAND CHARGE \$9.25 PER KW
CURRENT USAGE: HOURS/YEAR 2,600	REVISED USAGE: HOURS/YEAR 1,040
BASELINE ENERGY CONSUMPTION 28,080 KWH/YR	ECO ENERGY CONSUMPTION 11,232 KWHMR
BASELINE DEMAND 10.8 KW	ECO DEMAND 10.8 KW
NET ENERGY SAVINGS 16,848 KWH/YR	NET DEMAND SAVINGS \$1,199 MR NET DOLLAR SAVINGS \$1,788 MR
MAINTENANCE SAVINGS	E SAVINGS
24 LAMPS @ \$47.00 / 20,000 HOURS • 2,60	2,600 HR/YR = \$147 / YEAR (WITHOUT SKYLIGHTS) 1,040 HR/YR = \$59 / YEAR (WITH SKYLIGHTS)
NET MAINTENANCE SAVINGS	\$88 IYEAR

Unit values

Totals

UOO

_______________________________ LIGHTING UPGRADE Date: FEBRUARY 2, 1995 Estimate: LIGHTING PRODUCT UPGRADE Description: Bid Date: FEBRUARY 2, 1995 HANGAR LIGHTING Project: Job #: 94013.04 BLDG 4242 Location: City indx:Raleigh, NC Sq. footage: Description Line # Matl Labor Equipment Manhours ______ DEMOLITION, 2X4 FLUORESCENT FIXTURES 0002000000 27.00 FIXTURE Unit values 0.49 0.00 13.35 0.00 0.00 13.35 \$0 \$0 \$0 Totals 13.23 \$360 \$360 0002030000 DEMOLITION, HIGH BAY FIXTURES 24.00 FIXTURE 0.00 Unit values 0.00 27.50 0.00 27.50 1.00 Totals 24.00 \$0 \$660 \$0 \$0 \$660 0010500000 2X4 2-32 WATT FLUORESCENT LAMPS, RECESSED MOUNTED WITH REFLECTORS 3.00 FIXTURE 0.00 Unit values 1.51 75.00 41.50 0.00 . 116.50 \$225 \$125 \$0 Totals 4.53 \$0 \$350 0011000000 400 WATT METAL HALIDE FIXTURE 24.00 FIXTURE 2.00 0.00 Unit values 207.00 55.00 0.00 262.00 \$4,968 \$1,320 \$0 Totals 48.00 \$0 \$6,288

2X4 3-32 WATT FLUORESCENT LAMPS, SURFACE

41.50

\$3,461

\$996

0.00

\$0

\$0

MOUNTED WITH REFLECTOR

1.51

126

36.24

79.00

\$1,896

\$7,089

24.00 FIXTURE

120.50

\$2,892

\$10,550

0.00

\$0

\$0

_______ Description Line # Sub Manhours Matl Labor Equipment Total \$7,089 \$3,461 \$0 \$0 126 \$10,550 ESTIMATE TOTAL \$354 SALES TAX 5.00% MATL MARKUP 0.00% \$0 \$0 0.00% LABOR MARKUP EQUIPT MARKUP 0.00% \$0 SUB MARKUP 0.00% \$0 \$0 TOTAL BEFORE CONTINGENC \$7,443 \$3,461 \$10,904 \$545 CONTINGENCY \$545 5.00% BOND PROFIT 10.00% \$1,090 JOB TOTAL \$13,085

Estimate: LIGHTING UPGRADE Date: FEBRUARY 2, 1995
Description: LIGHTING PRODUCT UPGRADE
Project: HANGAR LIGHTING Bid Date: FEBRUARY 2, 1995
Location: BLDG 4242 Job #: 94013.04
Sq. footage: City indx:Raleigh, NC

=======================================	ST	JMMARY				
	Manhours	Matl	Labor	Equipment	Sub	Total

U00	126	\$7,089	\$3,461	\$0	\$0	\$10,550
TOTAL	126	\$7,089	\$3,461	\$0	\$0	\$10,550
SALES TAX MATL MARKUP LABOR MARKUP	5.00% 0.00% 0.00%	\$354 \$0	\$0			
EQUIPT MARKUP SUB MARKUP	0.00% 0.00%		ΨŪ	\$0	\$0	
TOTAL BEFORE C CONTINGENCY BOND PROFIT	CONTINGENC 5.00% 5.00% 10.00%	\$7,443	\$3,461	\$0	\$0	\$10,904 \$545 \$545 \$1,090
JOB TOTAL						\$13,085

Totals

UOO

0.00

0

\$2,934

_______ Estimate: BLDG 4242 Date: FEBRUARY 2, 1995
Description: CONVENTIONAL SKYLIGHT & CONTROLS
Project: HANGAR STUDY Bid Date: FEBRUARY 2, 1995 BLDG 4242 Job #: 94013.04 Location: Sq. footage: City indx:Raleigh, NC Line # Description Manhours Matl Labor Equipment Sub Total _______ CONVENTIONAL SKYLIGHT WITH 4" INSULATED CURBS 0060000001 (DOUBLE PANED) 150.00 SQ. FT 19.56 \$2,934 Unit values 2.41 0.00 0.09 0.00 22.06

\$362

\$362

\$14

\$14

\$0

\$0

\$3,310

\$3,310

Line #	Description	on				
,,,	Manhours	Matl	Labor	Equipment	Sub	Total
1611350023	LOW VOLTAG	GE WIRE #3	18-4C			
******	1 00	15 40	24 00	0.00	5.00	
Unit values Totals	1.23 6.15	15.40 \$77	34.00 \$170	0.00 \$0	0.00 \$0	49.40 \$247
1611750101	LIGHTING (CONTACTOR				
					2.00	
Unit values	2.00	137.00	55.00	0.00	0.00	192.00
Totals	4.00	\$274	\$110	\$0	\$0	\$384
1611850101	PHOTO SWIT	rch 50-500	FC ADJUS	STABLE		
** *!					2.00	
Unit values	1.00	290.00	27.50	0.00	0.00	317.50
Totals	2.00	\$580	\$55	\$0	\$0	\$635
1611870101	LOW VOLTA	SE TRANS 1	L15V-24V			
11 3	0.55				1.00	
Unit values Totals	0.67 0.67	64.00	18.35	0.00	0.00	82.35
Totals	0.67	\$64	\$18	\$0	\$0	\$82
1611870102	SWITCHING	RELAYS				
					4.00	
Unit values	0.50	11.30	13.75	0.00	0.00	25.05
Totals	2.00	\$45	\$55	\$0	\$0	\$100
1611950101	1/2" EMT					
					340.00	
Unit values	0.05	0.38	1.29	0.00	0.00	1.67
Totals	17.00	\$129	\$439	\$0	\$0	\$568
U16 ELECTRICAL	32	\$1,169	\$847	\$0	\$0	\$2,016
-10 LLDOINIOND	J 2	42/200	₽ 0 ₹ 7	ΨÜ	γU	72,010

Line #	Description	on				
	Manhours	Matl	Labor	Equipment	Sub	Total
*=========		<u> </u>				
ESTIMATE TOTAL	32	\$4,103	\$1,209	\$14	\$0	\$5,326
SALES TAX MATL MARKUP	5.00% 0.00%	\$205 \$0				
LABOR MARKUP EQUIPT MARKUP SUB MARKUP	0.00% 0.00% 0.00%		\$0	\$0	\$0	
TOTAL BEFORE C CONTINGENCY BOND PROFIT	ONTINGENC 5.00% 5.00% 10.00%	\$4,308	\$1,209	\$14	\$0	\$5,531 \$277 \$277 \$553
JOB TOTAL						\$6,637

Estimate: BLDG 4242 Date: FEBRUARY 2, 1995
Description: CONVENTIONAL SKYLIGHT & CONTROLS
Project: HANGAR STUDY Bid Date: FEBRUARY 2, 1995
Location: BLDG 4242 Job #: 94013.04
Sq. footage: City indx:Raleigh, NC

SUMMARY

	3(JIMMKI				
	Manhours	Matl	Labor	Equipment	Sub	Total
U00 U16 ELECTRICAL	0 32	\$2,934 \$1,169	\$362 \$847	\$14 \$0	\$0 \$0	\$3,310 \$2,016
TOTAL	32	\$4,103	\$1,209	\$14	\$0	\$5,326
SALES TAX MATL MARKUP LABOR MARKUP	5.00% 0.00% 0.00%	\$205 \$0	\$0			
EQUIPT MARKUP SUB MARKUP	0.00% 0.00%			\$0	\$0	
TOTAL BEFORE C CONTINGENCY BOND PROFIT	ONTINGENC 5.00% 5.00% 10.00%	\$4,308	\$1,209	\$14	\$0	\$5,531 \$277 \$277 \$553
JOB TOTAL						\$6,637

ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP)
LLATION & LOCATION: FORT BRAGE BESTOWN TO LCCID FY95 LCCID FY95 (92) INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3 PROJECT NO. & TITLE: 7937 SKY LIGHTS & LIGHTING PRODUCTS @ HANGARS FISCAL YEAR 95 DISCRETE PORTION NAME: LIGHTING ANALYSIS DATE: 02-03-95 ECONOMIC LIFE 10 YEARS PREPARED BY: JAH 1. INVESTMENT A. CONSTRUCTION COST 56709. 2835. \$ B. SIOH C. DESIGN COST \$ 2835. D. TOTAL COST (1A+1B+1C) \$ 62380. E. SALVAGE VALUE OF EXISTING EQUIPMENT \$ 0. F. PUBLIC UTILITY COMPANY REBATE G. TOTAL INVESTMENT (1D - 1E - 1F) 62380. 2. ENERGY SAVINGS (+) / COST (-) DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993 UNIT COST SAVINGS ANNUAL \$ DISCOUNT DISCOUNTED FUEL \$/ MWH(1) MWH/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5) 156. 0. 0. 0. \$ 5456. \$ 0. \$ 0. \$ 0. \$ 0. \$ 5103. \$ 10559. 5456. A. ELECT \$ 34.95 8.77 47850. B. DIST \$.00 9.26 0. 0. 0. 0. C. RESID \$.00 10.08 0. .00 10.39 9.39 D. NAT G S 0. E. COAL \$ F. LPG \$.00 8.78 0. M. DEMAND SAVINGS 8.49 43324. 156. N. TOTAL 91174. 3. NON ENERGY SAVINGS(+) / COST(-) A. ANNUAL RECURRING (+/-) \$ 1047. (1) DISCOUNT FACTOR (TABLE A) 8.49 (2) DISCOUNTED SAVING/COST (3A X 3A1) 8889. B. NON RECURRING SAVINGS(+) / COSTS(-) SAVINGS(+) YR DISCNT
COST(-) OC FACTR
(1) (2) (3) DISCOUNTED ITEM SAVINGS(+)/ COST(-)(4) d. TOTAL 0. C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)\$ 8889. 4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))\$ 11606. 5. SIMPLE PAYBACK PERIOD (1G/4) **5.37 YEARS** 6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) \$ 100063. 7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.60 (IF < 1 PROJECT DOES NOT QUALIFY) 8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): 8.09 %

LIFE CYCLE COST ANALYSIS SUMMARY

62,703 KWHYR 0 WATTS 9,570 WATTS 0 WATTS 0 WATTS 0 WATTS 0 WATTS \$932 MR \$2,856 MR 9.57 KW OF HANGAR FACILITIES AT SIMMONS ARMY AIRFIELD PER KWH PER KW 29 W/FIXT = 58 W/FIXT = 87 W/FIXT = 118 W/FIXT = 58 W/FIXT **125 W/FIXT** NET DEMAND SAVINGS NET DOLLAR SAVINGS \$0.03495 FORT BRAGG LIMITED ENERGY STUDY REPLACEMENT FIXTURE DATA ECO ENERGY CONSUMPTION INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT 0 2 LAMP U @ 0 2 LAMP @ 165 2 LAMP @ 0 3 LAMP @ 0 4 LAMP @ 0 2 LAMP @ ELECTRIC COSTS; ENERGY CHARGE DEMAND CHARGE **ECO 1: INTERIOR / EXTERIOR LIGHTING** 0 2 LAMP **ECO DEMAND** MAINTENANCE SAVINGS 2 FOOT 4 FOOT **16 DECEMBER 1994** 117,739 KWH/YR 55,037 KWH/YR ž 17.97 0 WATTS 9,476 WATTS 8,494 WATTS 0 WATTS 0 WATTS 0 WATTS 45 W/FIXT = 92 W/FIXT = 137 W/FIXT = 184 W/FIXT = 92 W/FIXT = 144 W/FIXT = BUILDING #: 7937 - HANGAR BASELINE ENERGY CONSUMPTION **NET ENERGY SAVINGS** 7 EXISTING FIXTURE DATA 2 LAMP U @ AREA USE:_ HOURS/DAY 103 2 LAMP @ 62 3 LAMP @ 4 LAMP @ BASELINE DEMAND 2 LAMP @ DAYSWEEK 4 FOOT 2 FOOT 8 F00T

(4' FLUORESCENT LAMPS)

\$102 / YEAR

6,570 HR/YR =

\$102 NEAR

NET MAINTENANCE SAVINGS

\$5.00 / 20,000 HOURS •

62 LAMPS @

, IRFIELD		PER KWH PER KW		228,110 KWHMR	37.2 KW	3S \$4,129 MR IS \$7,546 MR		(WITHOUT SKYLIGHTS) (WITH SKYLIGHTS)	
FORT BRAGG LIMITED ENERGY STUDY OF HANGAR FACILITIES AT SIMMONS ARMY AIRFIELD ECO 1: INTERIOR / EXTERIOR LIGHTING 02 FEBRUARY 1895	CONVENTIONAL SKY LIGHTS IN HANGARS	• ELECTRIC COSTS: \$0.03495 ENERGY CHARGE \$9.25	REVISED USAGE; HOURS/YEAR 6,132	KWH/YR ECO ENERGY CONSUMPTION	V ECO DEMAND	IHIYR NET DEMAND SAVINGS NET DOLLAR SAVINGS	MAINTENANCE SAVINGS	8,760 HR/YR = \$1,720 / YEAR 6,132 HR/YR = \$1,204 / YEAR	\$516 NEAR
FORT BRAGG LOF HANGAR FACILITIE	CONVENTIOR	BUILDING #: 7937 - HANGAR WATTAGE_CONTROLLED: 37,200 W PEAK_USE: (1-YES, 0-NO)	CURRENT USAGE: HOURS/YEAR 8,760	CONSUMPTION 325,872	BASELINE DEMAND 37.2 KW	NET ENERGY SAVINGS 97,762 KWH/YR	MAINT	124 LAMPS @ \$38.00 / 24,000 HOURS • 124 LAMPS @ \$38.00 / 24,000 HOURS •	NET MAINTENANCE SAVINGS

_______ LIGHTING UPGRADE Date: FEBRUARY 2, 1995 Estimate: LIGHTING PRODUCT UPGRADE Description: Bid Date: FEBRUARY 2, 1995 HANGAR LIGHTING Project: BLDG 7937 Job #: 94013.04 Location: City indx: Raleigh, NC Sq. footage: ______ Description Line # Matl Labor Equipment Sub Manhours 0002000000 DEMOLITION, 2X4 FLUORESCENT FIXTURES 110.00 FIXTURE 0.00 Unit values 0.49 0.00 13.35 0.00 13.35 Totals 53.90 \$0 \$1,469 \$0 \$0 \$1,469 0002010000 DEMOLITION, INCANDESCENT FIXTURES/EXIT SIGNS 14.00 FIXTURE Unit values 0.26 0.00 7.10 0.00 0.00 7.10 Totals 3.64 \$99 \$0 \$0 \$0 \$99 0002020000 DEMOLITION, 1X4 FLUORESCENT FIXTURES 55.00 FIXTURE 0.49 0.00 13.35 Unit values 0.00 0.00 13.35 Totals 26.95 \$0 \$734 \$0 \$0 \$734 0010000000 1X4 2-32 WATT FLUORESCENT LAMPS, SURFACE MOUNTED 45.00 FIXTURE 31.50 Unit values 1.14 60.00 0.00 0.00 91.50 Totals 51.30 \$2,700 \$1,418 \$0 \$0 \$4,118 2X4 2-32 WATT FLUORESCENT LAMPS, RECESSED 0010100000 MOUNTED 48.00 FIXTURE Unit values 1.51 59.00 41.50 0.00 0.00 100.50 Totals 72.48 \$2,832 \$1,992 \$0 \$0 \$4,824 0010200000 1X4 2-32 WATT FLUORESCENT LAMPS, RECESSED MOUNTED 4.00 FIXTURE Unit values 1.14 51.00 31.50 0.00 0.00 82.50 Totals 4.56 \$204 \$126 \$0 \$0 \$330 0010300000 1X4 2-32 WATT FLUORESCENT LAMPS, WALL MOUNTED 6.00 FIXTURE Unit values 1.14 60.00 31.50 0.00 0.00 91.50 Totals 6.84 \$360 \$189 \$0 \$0 \$549 0010500000 2X4 2-32 WATT FLUORESCENT LAMPS, RECESSED MOUNTED WITH REFLECTORS 62.00 FIXTURE Unit values 1.51 75.00 41.50 0.00 0.00 116.50 Totals 93.62 \$4,650 \$2,573 \$0 \$0 \$7,223 0010700000 LED EXIT SIGN, RETROFIT KIT

14.00 FIXTURE

03-Feb-95		MeansD	ata for Lot	us		Page 2
Unit values	1.00	35.00	27.50	0.00	0.00	62.50
Totals	14.00	\$490	\$385	\$0		\$875

Line #	Descripti	on				
	Manhours	Matl	Labor	Equipment	Sub	Total
000	328	\$11,236	\$8,985	\$0	\$0	\$20,221
ESTIMATE TOTAL	328	\$11,236	\$8,985	\$0	\$0	\$20,221
SALES TAX MATL MARKUP LABOR MARKUP EQUIPT MARKUP SUB MARKUP	5.00% 0.00% 0.00% 0.00% 0.00%	\$562 \$0	\$0	\$0	\$0	
TOTAL BEFORE C CONTINGENCY BOND PROFIT	ONTINGENC 5.00% 5.00% 10.00%	\$11,798	\$8,985	\$0	\$0	\$20,783 \$1,039 \$1,039 \$2,078
JOB TOTAL						\$24,939

Estimate: LIGHTING UPGRADE Date: FEBRUARY 2, 1995
Description: LIGHTING PRODUCT UPGRADE
Project: HANGAR LIGHTING Bid Date: FEBRUARY 2, 1995
Location: BLDG 7937 Job #: 94013.04

Sq. footage:

City indx:Raleigh, NC

CHMMARV

	S	UMMARY				
	Manhours	Matl	Labor	Equipment	Sub	Total
	*==#===#					
UOO	328	\$11,236	\$8,985	\$0	\$0	\$20,221
TOTAL	328	\$11,236	\$8,985	\$0	\$0	\$20,221
SALES TAX MATL MARKUP LABOR MARKUP	5.00% 0.00% 0.00%	\$562 \$0	\$0			
EQUIPT MARKUP SUB MARKUP	0.00%		4.5	\$0	\$0	
TOTAL BEFORE C CONTINGENCY BOND PROFIT	ONTINGENC 5.00% 5.00% 10.00%	\$11,798	\$8,985	\$0	\$0	\$20,783 \$1,039 \$1,039 \$2,078
JOB TOTAL						\$24,939

Estimate: BLDG 7937 Date: FEBRUARY 2, 1995
Description: CONVENTIONAL SKYLIGHT & CONTROLS
Project: HANGAR STUDY Bid Date: FEBRUARY 2, 1995
Location: BLDG 7937 Job #: 94013.04
Sq. footage: City indx:Raleigh, NC

Line # Description

Manhours Matl Labor Equipment Sub Total _______

0060000001 CONVENTIONAL SKYLIGHT WITH 4" INSULATED CURBS

(DOUBLE PANED) 960.00 SQ. FT 0.00 19.56 2.41 0.09 0.00 \$18,778 \$2,314 \$86 Unit values 0.00 22.06 Totals \$0 \$21,178

UOO 0 \$18,778 \$2,314 \$86 \$0 \$21,178

U16 ELECTRICAL

Description Line # Equipment Sub Matl Labor Manhours LOW VOLTAGE WIRE #18-4C 1611350023 14.00 CLF 1.23 34.00 0.00 0.00 49.40 15.40 Unit values 17.22 \$216 \$476 \$0 \$0 \$692 Totals LIGHTING CONTACTOR 1611750101 6.00 EA. 0.00 192.00 2.00 137.00 55.00 0.00 Unit values \$0 \$0 \$1,152 12.00 \$822 \$330 Totals PHOTO SWITCH 50-500 FC ADJUSTABLE 1611850101 4.00 EA. 0.00 0.00 317.50 27.50 1.00 290.00 Unit values \$0 \$1,270 4.00 \$0 Totals \$1,160 \$110 LOW VOLTAGE TRANS 115V-24V 1611870101 1.00 EA. 18.35 0.00 0.00 82.35 64.00 Unit values 0.67 \$18 \$0 \$0 \$82 \$64 Totals 0.67 SWITCHING RELAYS 1611870102 8.00 EA. 0.00 0.00 25.05 11.30 13.75 Unit values 0.50 \$0 \$200 4.00 \$90 \$110 \$0 Totals 1/2" EMT 1611950101 500.00 LF 0.00 1.67 1.29 0.00 Unit values 0.05 0.38 \$0 \$835 \$0 Totals \$645 25.00 \$190 \$0 \$4,231 \$1,689 \$0 63 \$2,542

	========	========				
Line #	Descripti	on				
	Manhours	Matl	Labor	Equipment	Sub	Total
============	========	=======				
ESTIMATE TOTAL	, 63	\$21,320	\$4,003	\$86	\$0	\$25,409
SALES TAX MATL MARKUP LABOR MARKUP	5.00% 0.00% 0.00%	\$1,066 \$0	\$0			
EQUIPT MARKUP SUB MARKUP	0.00%		·	\$0	\$0	
TOTAL BEFORE C CONTINGENCY BOND PROFIT	CONTINGENC 5.00% 5.00% 10.00%	\$22,386	\$4,003	\$86	\$0	\$26,475 \$1,324 \$1,324 \$2,648
JOB TOTAL						\$31,770

Estimate: BLDG 7937 Date: FEBRUARY 2, 1995
Description: CONVENTIONAL SKYLIGHT & CONTROLS
Project: HANGAR STUDY Bid Date: FEBRUARY 2, 1995
Location: BLDG 7937 Job #: 94013.04
Sq. footage: City indx:Raleigh, NC

	S	UMMARY				
	Manhours	Matl	Labor	Equipment	Sub	Total
=======================================	=======					
U00 U16 ELECTRICAL	0 63	\$18,778 \$2,542	\$2,314 \$1,689	\$86 \$0	\$0 \$0	\$21,178 \$4,231
TOTAL	63	\$21,320	\$4,003	\$86	\$0	\$25,409
SALES TAX MATL MARKUP LABOR MARKUP EQUIPT MARKUP SUB MARKUP	5.00% 0.00% 0.00% 0.00% 0.00%	\$1,066 \$0	\$0	\$0	\$0	
TOTAL BEFORE CONTINGENCY BOND PROFIT	ONTINGENC 5.00% 5.00% 10.00%	\$22,386	\$4,003	\$86	\$0	\$26,475 \$1,324 \$1,324 \$2,648
JOB TOTAL						\$31,770

INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3 PROJECT NO. & TITLE: 8944 SKY LIGHTS & LIGHTING PRODUCTS @ HANGARS FISCAL YEAR 95 DISCRETE PORTION NAME: LIGHTING ANALYSIS DATE: 02-03-95 ECONOMIC LIFE 10 YEARS PREPARED BY: JAH 1. INVESTMENT 46670. A. CONSTRUCTION COST 2334. B. SIOH \$ 2334. C. DESIGN COST D. TOTAL COST (1A+1B+1C) \$ 51337. E. SALVAGE VALUE OF EXISTING EQUIPMENT \$ F. PUBLIC UTILITY COMPANY REBATE \$ G. TOTAL INVESTMENT (1D - 1E - 1F) 51337. 2. ENERGY SAVINGS (+) / COST (-) DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993 UNIT COST SAVINGS ANNUAL \$ DISCOUNT DISCOUNTED \$/ MWH(1) MWH/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5) FUEL 3879. 0. A. ELECT \$ 34.95 111. 8.77 34017. 0. \$ 9.26 B. DIST \$.00 0. ***** 0. 0. 0. 0. 4023. 7902. 10.08 C. RESID \$.00 0. 0. 0. D. NAT G \$.00 10.39 0. .00 E. COAL \$ 9.39 0. \$ 0. \$ 34155. \$.00 8.78 F. LPG 8.49 M. DEMAND SAVINGS 111. 68173. N. TOTAL 3. NON ENERGY SAVINGS(+) / COST(-) \$ 793. A. ANNUAL RECURRING (+/-) (1) DISCOUNT FACTOR (TABLE A) 8.49 (2) DISCOUNTED SAVING/COST (3A X 3A1) 6733. B. NON RECURRING SAVINGS(+) / COSTS(-) SAVINGS(+) YR DISCNT DISCOUNTED
COST(-) OC FACTR SAVINGS(+),
(1) (2) (3) COST(-)(4) ITEM SAVINGS(+)/ d. TOTAL \$ 0. C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)\$ 6733. 4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))\$ 5.90 YEARS 5. SIMPLE PAYBACK PERIOD (1G/4) 6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) \$ 74905. 1.46 7. SAVINGS TO INVESTMENT RATIO (SIR) = (6 / 1G) =(IF < 1 PROJECT DOES NOT OUALIFY) 7.07 % 8. ADJUSTED INTERNAL RATE OF RETURN (AIRR):

LIFE CYCLE COST ANALYSIS SUMMARY STUDY: 8944
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID FY95 (92)

KWH/YR 0 WATTS 5,742 WATTS 0 WATTS 0 WATTS 0 WATTS 0 WATTS \$394 MR \$1,206 MR (4' FLUORESCENT LAMPS) ₹ 5.74 37,622 OF HANGAR FACILITIES AT SIMMONS ARMY AIRFIELD PER KWH PER KW 29 W/FIXT = 58 W/FIXT = 87 W/FIXT = 118 W/FIXT = 58 W/FIXT 125 W/FIXT NET DEMAND SAVINGS NET DOLLAR SAVINGS \$0.03495 FORT BRAGG LIMITED ENERGY STUDY REPLACEMENT FIXTURE DATA \$7 / YEAR ECO ENERGY CONSUMPTION INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT 0 2 LAMP U @ 0 2 LAMP @ 99 2 LAMP @ 0 3 LAMP @ 0 4 LAMP @ 0 2 LAMP @ ELECTRIC COSTS; ENERGY CHARGE DEMAND CHARGE **ECO 1: INTERIOR / EXTERIOR LIGHTING ECO DEMAND** MAINTENANCE SAVINGS 6,570 HR/YR = 2 FOOT 8 FOOT 4 F00T **16 DECEMBER 1994** 60,855 KWH/YR 23,233 KWH/YR ξ 9.29 \$5.00 / 20,000 HOURS * 0 WATTS 8,740 WATTS 548 WATTS 0 WATTS 0 WATTS 0 WATTS 45 W/FIXT = 92 W/FIXT = 137 W/FIXT = 184 W/FIXT = 92 W/FIXT = 144 W/FIXT BUILDING #: 8944 - HANGAR BASELINE ENERGY CONSUMPTION **NET ENERGY SAVINGS** 4 LAMPS @ 18 EXISTING FIXTURE DATA 2 LAMP U @ 1 LAMP @ 95 2 LAMP @ 4 3 LAMP @ 4 LAMP @ BASELINE DEMAND AREA USE:_ HOURS/DAY 2 LAMP @ DAYSWEEK FOOT 2 FOOT 8 F001

\$7 NEAR

NET MAINTENANCE SAVINGS

	ACILITIES AT SIM ECO 1: INTERIOR / EXTERIO 16 DECEMBER 199 INTERIOR LIGHTING: EXIT SIGN I ELE ENE DEW ANTTAGE: 2,891 KWH/YR ECC 2,891 KWH/YR ECC 2,891 KWH/YR ECC MAINTENANCE SA	FORT BRAGG LIMITED ENERGY STUDY IGAR FACILITIES AT SIMMONS ARMY AI ECO 1: INTERIOR / EXTERIOR LIGHTING 16 DECEMBER 1994 INTERIOR LIGHTING: EXIT SIGN REPLACEMENT ELECTRIC COSTS: ENERGY CHARGE \$9.25 BEPLA 11 # OF EXIT SIGNS: 0.33 KW ECO ENERGY CONSUMPTION NOT DEMAND SAVING MAINTENANCE SAVINGS	RGY STUDY NS ARMY AIRFIELD HTING COSTS: \$0.03495 PER KWH SHARGE \$9.25 PER KWH HARGE \$9.25 PER KWH REPLACEMENT SIGNS: WATTAGE: WATTAGE: NET DEMAND SAVINGS NET DOLLAR SAVINGS SS	LD 11 11 289 KWHYR 0.03 KW \$124 f/R
11 LAMPS @ \$3.50 /1,00 LAMPS @ 10,00 NET MAINTEN	\$3.50 / 1,000 HOURS • / 10,000 HOURS • / MAINTENANCE SAVINGS	8,760 HR/YR =	\$337 / YEAR (INCANDE \$0 / YEAR (COMPAC	(INCANDESCENT) (COMPACT FLUORESCENT)

ARM'	WATTAGE CONTROLLED: 32,400 W PEAK USE: 1 (1-YES, 0-NO) CURRENT USAGE: 8,760 HOURS/YEAR 8,760 REVISED USAGE: 6,132	KWHIYR ECO ENERGY CONSUMPTION 198,677	32.4 3GY SAVINGS 85,147 P	MAINTENANCE SAVINGS	108 LAMPS @ \$38.00 / 24,000 HOURS • 8,760 HR/YR = \$1,498 / YEAR (WITHOUT SKYLIGHTS) 108 LAMPS @ \$38.00 / 24,000 HOURS • 6,132 HR/YR = \$1,049 / YEAR (WITH SKYLIGHTS)	NET MAINTENANCE SAVINGS \$449 MEAR
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Estimate: Description: Project: Location: Sq. footage:	HANGAR LIG	PRODUCT UP SHTING B J	GRADE id Date: ob #:	FEBRUARY 2, FEBRUARY 2, 94013.04 Raleigh, NO	1995	
======================================	Description	on				
	Manhours	Matl	Labor	Equipment	Sub	Total
	======				ter strike blike brees filler dage brees strike strike b	
0002000000	DEMOLITIO	N, 2X4 FLU	ORESCENT	FIXTURES	00.00	TI T SEMILID D
Unit values Totals	0.49 48.51	0.00 \$0	13.35 \$1,322	0.00	0.00	FIXTURE 13.35 \$1,322
0002010000	DEMOLITIO	N, INCANDE	SCENT FIX	KTURES/EXIT	SIGNS	FIXTURE
Unit values Totals	0.26 2.86		7.10 \$78			7.10 \$78
0010100000	2X4 2-32 MOUNTED	WATT FLUC	RESCENT I	LAMPS, RECES	SSED	FIXTURE
Unit values Totals	1.51	59.00 \$5,605	41.50 \$3,943	0.00 \$0	0.00	100.50 \$9,548
0010500000	2X4 2-32	WATT FLUC	RESCENT 1	LAMPS, RECES	SSED	FIXTURE
Unit values Totals	MOUNTED W 1.51 6.04	75.00 \$300	41.50	0.00 \$0	0.00	
0010700000	LED EXIT	SIGN, RETR	OFIT KIT		11 00	FIXTURE
Unit values Totals	1.00 11.00	35.00 \$385	27.50 \$303	0.00 \$0	0.00	
U00	212	\$6,290	\$5,812	\$0	\$0	\$12,102

	========	=======	=======		=======	
Line #	Description	on				
	Manhours	Matl	Labor	Equipment	Sub	Total
=======================================		=======				
ESTIMATE TOTAL	212	\$6,290	\$5,812	\$0	\$0	\$12,102
SALES TAX MATL MARKUP LABOR MARKUP EQUIPT MARKUP SUB MARKUP	5.00% 0.00% 0.00% 0.00% 0.00%	\$315 \$0	\$0	\$0	\$0	
	ONTINGENC 5.00% 5.00% 10.00%	\$6,605	\$5,812	\$0	\$0	\$12,417 \$621 \$621 \$1,242
JOB TOTAL						\$14,900

Estimate: LIGHTING UPGRADE Date: FEBRUARY 2, 1995
Description: LIGHTING PRODUCT UPGRADE
Project: HANGAR LIGHTING Bid Date: FEBRUARY 2, 1995
Location: BLDG 8944 Job #: 94013.04

Project: Location: Sq. footage:	HANGAR LIG	HTING	Job #:	FEBRUARY 2, 94013.04 :Raleigh, NC	1995	
	SI	JMMARY				
	Manhours	Matl	Labor	Equipment	Sub	Total
=======================================	========	======	=======			
U00	212	\$6,290	\$5,812	\$0	\$0	\$12,102
TOTAL	212	\$6,290	\$5,812	\$0	\$0	\$12,102
SALES TAX MATL MARKUP LABOR MARKUP EQUIPT MARKUP	5.00% 0.00% 0.00% 0.00%	\$315 \$0	\$0	\$0		
SUB MARKUP	0.00%				\$0	
TOTAL BEFORE C CONTINGENCY BOND PROFIT	ONTINGENC 5.00% 5.00% 10.00%	\$6,605	\$5,812	\$0	\$0	\$12,417 \$621 \$621 \$1,242
JOB TOTAL						\$14,900

\$0

\$86

\$21,178

UOO

Estimate: BLDG 8944 Date: FEBRUARY 2, 1995
Description: CONVENTIONAL SKYLIGHT & CONTROLS
Project: HANGAR STUDY Bid Date: FEBRUARY 2, 1995
Location: BLDG 8944 Job #: 94013.04 BLDG 8944 Location: City indx:Raleigh, NC Description Line # _____ Manhours Matl Labor Equipment Sub Total CONVENTIONAL SKYLIGHT WITH 4" INSULATED CURBS 0060000001 960.00 SQ. FT (DOUBLE PANED) 0.00 19.56 2.41 0.00 \$18,778 \$2,314 0.00 22.06 0.09 Unit values \$0 \$21,178 \$86 Totals

\$18,778 \$2,314

Line #	Description	on				
	Manhours	Matl	Labor	Equipment	Sub	Total
=======================================	=======	=======				
1611350023	LOW VOLTA	GE WIRE #1	.8-4C		14.00	
Unit values Totals	1.23 17.22	15.40 \$216	34.00 \$476	0.00 \$0	0.00	49.40 \$692
1611750101	LIGHTING	CONTACTOR			6.00	EA.
Unit values Totals	2.00 12.00	137.00 \$822	55.00 \$330	0.00 \$0	0.00	192.00 \$1,152
1611850101	PHOTO SWI	TCH 50-500	FC ADJU	STABLE	4.00	EA.
Unit values Totals	1.00	290.00 \$1,160	27.50 \$110		0.00	317.50 \$1,270
1611870101	LOW VOLTA	GE TRANS	115V-24V		1.00	EA.
Unit values Totals	0.67 0.67	64.00 \$64	18.35 \$18		0.00	82.35 \$82
1611870102	SWITCHING	RELAYS			8.00	EA.
Unit values Totals	0.50 4.00	11.30 \$90	13.75 \$110		0.00	25.05
1611950101	1/2" EMT				500.00	LF
Unit values Totals	0.05 25.00	0.38 \$190	1.29 \$645		0.00	1.67
U16 ELECTRICAI	63	\$2,542	\$1,689	\$0	\$0	\$4,231

Line #	Descripti	on				
	Manhours	Matl	Labor	Equipment	Sub	Total
=======================================	:=======	=====				
ESTIMATE TOTAL	, 63	\$21,320	\$4,003	\$86	\$0	\$25,409
SALES TAX MATL MARKUP LABOR MARKUP	5.00% 0.00% 0.00%	\$1,066 \$0	\$0			
EQUIPT MARKUP SUB MARKUP	0.00%		γ°	\$0	\$0	
TOTAL BEFORE C CONTINGENCY BOND PROFIT	CONTINGENC 5.00% 5.00% 10.00%	\$22,386	\$4,003	\$86	\$0	\$26,475 \$1,324 \$1,324 \$2,648
JOB TOTAL						\$31,770

Estimate: BLDG 8944 Date: FEBRUARY 2, 1995
Description: CONVENTIONAL SKYLIGHT & CONTROLS
Project: HANGAR STUDY Bid Date: FEBRUARY 2, 1995
Location: BLDG 8944 Job #: 94013.04
Sq. footage: City indx:Raleigh, NC

Sq. footage:

D4. +000430. SUMMARY

	5	UMMAKI				
	Manhours	Matl	Labor	Equipment	Sub	Total
==========	#=#==# =					
U00 U16 ELECTRICAL	0 63	\$18,778 \$2,542	\$2,314 \$1,689	\$86 \$0	\$0 \$0	\$21,178 \$4,231
TOTAL	63	\$21,320	\$4,003	\$86	\$0	\$25,409
SALES TAX MATL MARKUP LABOR MARKUP	5.00% 0.00% 0.00%	\$1,066 \$0	\$0			
EQUIPT MARKUP SUB MARKUP	0.00% 0.00%			\$0	\$0	
TOTAL BEFORE CONTINGENCY BOND PROFIT	ONTINGENC 5.00% 5.00% 10.00%	\$22,386	\$4,003	\$86	\$0	\$26,475 \$1,324 \$1,324 \$2,648
JOB TOTAL						\$31,770

ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP)

LLATION & LOCATION FORT PROCE LCCID FY95 (92) INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3 PROJECT NO. & TITLE: 9647 SKY LIGHTS & LIGHTING PRODUCTS @ HANGARS FISCAL YEAR 95 DISCRETE PORTION NAME: LIGHTING 02-03-95 ECONOMIC LIFE 10 YEARS PREPARED BY: JAH ANALYSIS DATE: 1. INVESTMENT 53422. A. CONSTRUCTION COST B. SIOH \$
C. DESIGN COST \$ 2671. 2671. D. TOTAL COST (1A+1B+1C) \$ 58764. E. SALVAGE VALUE OF EXISTING EQUIPMENT \$ 0. F. PUBLIC UTILITY COMPANY REBATE G. TOTAL INVESTMENT (1D - 1E - 1F) 58764. 2. ENERGY SAVINGS (+) / COST (-) DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993 UNIT COST SAVINGS ANNUAL \$ DISCOUNT DISCOUNTED \$/ MWH(1) MWH/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5) FUEL 121. A. ELECT \$ 34.95 4238. 0. 8.77 37167. 0. 0. \$ B. DIST \$.00 \$ \$ \$ \$ \$ 3838. \$ 8076. 0. 9.26 .00 C. RESID \$ 0. 10.08 0. 0. D. NAT G \$.00 10.39 0. .00 E. COAL \$ 9.39 0. F. LPG \$.00 0. 8.78 M. DEMAND SAVINGS \$ 32585. 8.49 N. TOTAL 121. 69751. 3. NON ENERGY SAVINGS(+) / COST(-) \$ 747. A. ANNUAL RECURRING (+/-)(1) DISCOUNT FACTOR (TABLE A) 8.49 (2) DISCOUNTED SAVING/COST (3A X 3A1) 6342. B. NON RECURRING SAVINGS(+) / COSTS(-) SAVINGS(+) YR DISCNT
COST(-) OC FACTR
(1) (2) (3) DISCOUNTED SAVINGS(+), COST(-)(4) ITEM SAVINGS(+)/ d. TOTAL \$ 0. C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)\$ 6342. 4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))\$ 8823. 5. SIMPLE PAYBACK PERIOD (1G/4) 6.66 YEARS 6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) \$ 76093. 7. SAVINGS TO INVESTMENT RATIO (SIR) = (6 / 1G) =1.29 (IF < 1 PROJECT DOES NOT QUALIFY) 8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): 5.80 %

70,303 KWH/YR 0 WATTS 10,730 WATTS 0 WATTS 0 WATTS 0 WATTS 0 WATTS 10.73 KW \$808 MR \$2,475 MR OF HANGAR FACILITIES AT SIMMONS ARMY AIRFIELD PER KWH PER KW 29 W/FIXT = 58 W/FIXT = 87 W/FIXT = 118 W/FIXT = 58 W/FIXT 125 W/FIXT **NET DEMAND SAVINGS** NET DOLLAR SAVINGS \$0.03495 FORT BRAGG LIMITED ENERGY STUDY REPLACEMENT FIXTURE DATA ECO ENERGY CONSUMPTION INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT 0 2 LAMP U@ 0 2 LAMP @ 185 2 LAMP @ 0 3 LAMP @ 0 4 LAMP @ 0 2 LAMP @ ELECTRIC COSTS ENERGY CHARGE DEMAND CHARGE **ECO 1: INTERIOR / EXTERIOR LIGHTING ECO DEMAND** MAINTENANCE SAVINGS 4 F00T **2 FOOT** 8 F00T **16 DECEMBER 1994** 118,002 KWH/YR 47,699 KWH/YR ş 18.01 14,996 WATTS 3,014 WATTS 0 WATTS 0 WATTS 0 WATTS 45 W/FIXT = 92 W/FIXT = 137 W/FIXT = 184 W/FIXT = 92 W/FIXT = 144 W/FIXT = BUILDING #: 9647 - HANGAR BASELINE ENERGY CONSUMPTION **NET ENERGY SAVINGS** 18 EXISTING FIXTURE DATA 2 LAMP U@ 1 LAMP @ 163 2 LAMP @ 22 3 LAMP @ 4 LAMP @ BASELINE DEMAND AREA USE: HOURS/DAY 2 LAMP @ DAYSWEEK 8 F00T 2 F001 4 F001

(4' FLUORESCENT LAMPS)

\$36 / YEAR

6,570 HR/YR =

36 MEAR

NET MAINTENANCE SAVINGS

\$5.00 / 20,000 HOURS *

22 LAMPS @

FORT BRAGG LIMITED ENERGY STUDY OF HANGAR FACILITIES AT SIMMONS ARMY AIRFIELD	ORT BRAGG LIMITED ENERGY STUDY ARE FACILITIES AT SIMMONS ARMY AI	D ENERGY SIMMONS AF	STUDY RMY AIR	KFIELD	
	16 DECEMBER 1994 INTERIOR LIGHTING: EXIT SIGN DEDI ACEMENT	R 1994			
BUILDING #: 9647 - HANGAR		ELECTRIC COSTS; ENERGY CHARGE DEMAND CHARGE	\$0.03495 P	PER KWH PER KW	
INCANDESCENTEXITSIGNS	FLUORESCENT EXIT SIGNS	SIGNS	REPLACE	REPLACEMENT SIGNS	
# OF EXIT SIGNS:	# OF EXIT SIGNS:	0	# OF EXIT SIGNS:	SIGNS: 11	- -1
WATTAGE: 30	WATTAGE:	18	WAT	WATTAGE:	13
BASELINĖ ENERGY CONSUMPTION	2,891 KWH/YR	ECO ENERGY CONSUMPTION	IPTION	28	289 KWH/YR
BASELINE DEMAND	0.33 KW	ECO DEMAND		0.03	3 KW
NET ENERGY SAVINGS	2,602 KWH/YR	NET DEMAI NET DOLLA	NET DEMAND SAVINGS NET DOLLAR SAVINGS	\$3 \$12	\$33 /YR \$124 /YR
	MAINTENANCE SAVINGS	SAVINGS			
11 LAMPS @ \$3.50 /1,000 HOURS • LAMPS @ /10,000 HOURS		8,760 HR/YR = \$337 HR/YR = \$0	\$337 / YEAR (IN	(INCANDESCENT) (COMPACT FLUORESCENT)	SCENT)
NET MAINTENA	IAINTENANCE SAVINGS	\$337 MEAR			

165,564 KWH/YR ₹ \$2,997 MR \$5,477 MR (WITHOUT SKYLIGHTS) (WITH SKYLIGHTS) 27 OF HANGAR FACILITIES AT SIMMONS ARMY AIRFIELD PER KWH PER KW NET DEMAND SAVINGS NET DOLLAR SAVINGS \$0.03495 FORT BRAGG LIMITED ENERGY STUDY 6,132 \$1,248 / YEAR \$874 / YEAR **ECO ENERGY CONSUMPTION** REVISED USAGE: HOURS/YEAR ELECTRIC COSTS: ENERGY CHARGE DEMAND CHARGE **ECO 1: INTERIOR / EXTERIOR LIGHTING** CONVENTIONAL SKY LIGHTS IN HANGARS \$374 IYEAR **ECO DEMAND** MAINTENANCE SAVINGS 8,760 HR/YR = 6,132 HR/YR = 02 FEBRUARY 1995 236,520 KWH/YR 70,956 KWH/YR ₹ **NET MAINTENANCE SAVINGS** 27 \$38.00 / 24,000 HOURS * \$38.00 / 24,000 HOURS * 27,000 W 1 (1-YES, 0-NO) 8,760 BUILDING #: 9647 - HANGAR **NET ENERGY SAVINGS** BASELINE ENERGY CONSUMPTION 90 LAMPS @ 90 LAMPS @ WATTAGE CONTROLLED: PEAK USE: CURRENT USAGE: HOURS/YEAR BASELINE DEMAND

______ LIGHTING UPGRADE Date: FEBRUARY 2, 1995 Estimate: LIGHTING PRODUCT UPGRADE Description: Bid Date: FEBRUARY 2, 1995 HANGAR LIGHTING Project: Job #: 94013.04 BLDG9647 Location: City indx:Raleigh, NC Sq. footage: Description Line # Labor Equipment Matl Manhours _____ 0002000000 DEMOLITION, 2X4 FLUORESCENT FIXTURES 148.00 FIXTURE 0.49 0.00 Unit values 0.00 13.35 0.00 13.35 \$0 \$1,976 \$0 \$0 Totals 72.52 \$1,976 DEMOLITION, INCANDESCENT FIXTURES/EXIT SIGNS 0002010000 11.00 FIXTURE 0.00 7.10 0.00 Unit values 0.26 0.00 7.10 \$0 Totals 2.86 \$0 \$78 \$0 \$78 DEMOLITION, 1X4 FLUORESCENT FIXTURES 0002020000 37.00 FIXTURE 0.00 13.35 0.00 0.00 13.35 0.49 Unit values \$0 \$494 \$0 \$0 \$494 Totals 18.13 2X4 2-32 WATT FLUORESCENT LAMPS, RECESSED 0010100000 126.00 FIXTURE MOUNTED 0.00 0.00 59.00 41.50 100.50 Unit values 1.51 \$5,229 \$0 \$0 \$12,663 \$7,434 Totals 190.26 0010300000 1X4 2-32 WATT FLUORESCENT LAMPS, WALL MOUNTED 26.00 FIXTURE 0.00 60.00 31.50 0.00 91.50 Unit values 1.14 \$1,560 \$819 \$0 \$0 29.64 \$2,379 Totals 0010400000 1X4 2-32 WATT FLUORESCENT LAMPS, PENDANT MOUNTED 11.00 FIXTURE 39.00 Unit values 1.14 31.50 0.00 0.00 70.50 Totals 12.54 \$429 \$347 \$0 \$0 \$776 0010500000 2X4 2-32 WATT FLUORESCENT LAMPS, RECESSED 22.00 FIXTURE MOUNTED WITH REFLECTORS Unit values 1.51 75.00 41.50 0.00 0.00 116.50 Totals 33.22 \$1,650 \$913 \$0 \$0 \$2,563 0010700000 LED EXIT SIGN, RETROFIT KIT 11.00 FIXTURE Unit values 35.00 27.50 0.00 0.00 62.50 1.00 Totals 11.00 \$385 \$303 \$0 \$0 \$688

Line #	Descripti	on				
	Manhours	Matl	Labor	Equipment	Sub	Total
U00	371	\$11,458	\$10,159	\$ 0	\$0	\$21,617
ESTIMATE TOTAL	371	\$11,458	\$10,159	\$0	\$0	\$21,617
SALES TAX MATL MARKUP LABOR MARKUP EQUIPT MARKUP SUB MARKUP	5.00% 0.00% 0.00% 0.00% 0.00%	\$573 \$0	\$0	\$0	\$0	
TOTAL BEFORE C CONTINGENCY BOND PROFIT	ONTINGENC 5.00% 5.00% 10.00%	\$12,031	\$10,159	\$0	\$0	\$22,190 \$1,109 \$1,109 \$2,219
JOB TOTAL						\$26,628

PROFIT

JOB TOTAL

\$2,219

\$26,628

Estimate: LIGHTING UPGRADE Date: Description: LIGHTING PRODUCT UPGRADE FEBRUARY 2, 1995

10.00%

HANGAR LIGHTING Bid Date: FEBRUARY 2, 1995 Project:

Job #: 94013.04 Location: BLDG9647 Sq. footage: City indx:Raleigh, NC

SUMMARY Manhours Matl Labor Equipment Sub ______ \$10,159 \$0 371 \$11,458 \$0 \$21,617 UOO \$11,458 \$10,159 \$0 \$0 3**71** \$21,617 TOTAL \$573 SALES TAX 5.00% MATL MARKUP 0.00% \$0 LABOR MARKUP 0.00% \$0 \$0 EQUIPT MARKUP 0.00% \$0 SUB MARKUP 0.00% \$22,190 \$0 \$0 TOTAL BEFORE CONTINGENC \$12,031 \$10,159 \$1,109 CONTINGENCY 5.00% \$1,109 BOND 5.00%

\$17,207

_______ Estimate: BLDG 9647 Date: FEBRUARY 2, 1995
Description: CONVENTIONAL SKYLIGHT & CONTROLS
Project: HANGAR STUDY Bid Date: FEBRUARY 2, 1995
Location: BLDG 9647 Job #: 94013.04

\$70 \$0

0

UOO

\$1,880

City indx:Raleigh, NC Sq. footage: ___________

\$15,257

Line # Description Manhours Matl Labor Equipment Sub Total _________ 0060000001 CONVENTIONAL SKYLIGHT WITH 4" INSULATED CURBS (DOUBLE PANED) 780.00 SQ. FT 0.00 19.56 2.41 0.00 \$15,257 \$1,880 Unit values 0.09 0.00 22.06 \$0 Totals \$70 \$17,207

========	=======================================	=======================================		=========	=======	========
Line #	Description	on				
	Manhours	Matl	Labor	Equipment		Total
1611350023	LOW VOLTA	GE WIRE #3	18-4C		4	
	1 22	15 40	34.00	0.00	14.00	
Unit values Totals	1.23 17.22	15.40 \$216	\$476	0.00 \$0	0.00 \$0	49.40 \$692
1611750101	LIGHTING (CONTACTOR				
					6.00	
Unit values		137.00	55.00	0.00	0.00	192.00
Totals	12.00	\$822	\$330	\$0	\$0	\$1,152
1611850101	PHOTO SWIT	CH 50-500	FC ADJU	STABLE		
Unit values	1 00	200 00	07.50	0.00	4.00	
Totals	1.00	290.00	27.50	0.00	0.00	317.50
Totals	4.00	\$1,160	\$110	\$0	\$0	\$1,270
1611870101	LOW VOLTAC	E TRANS	15V-24V			
***********	0 67	64.00	** 2 5 5	0.00	1.00	
Unit values Totals	0.67 0.67	64.00	18.35	0.00	0.00	82.35
Totals	0.67	\$64	\$18	\$0	\$0	\$82
1611870102	SWITCHING	RELAYS				
TT-1+1	0 50	11 20	12 25	0.00	8.00	
Unit values Totals	0.50 4.00	11.30 \$90	13.75 \$110	0.00 \$0	0.00	25.05
IOLAIS	4.00	\$90	\$110	\$0	\$0	\$200
1611950101	1/2" EMT					
77	0.05	0 00		0.00	500.00	
Unit values Totals	0.05 25.00	0.38 \$190	1.29	0.00	0.00	1.67
TULAIS	25.00	\$130	\$645	\$0	\$0	\$835

U16 ELECTRICAL 63 \$2,542 \$1,689 \$0 \$0 \$4,231

Line #	Descripti	.on				
	Manhours	Matl	Labor	Equipment	Sub	Total
	=======					
ESTIMATE TOTAL	63	\$17,799	\$3,569	\$70	\$0	\$21,438
SALES TAX MATL MARKUP	5.00% 0.00%	\$890				
LABOR MARKUP EQUIPT MARKUP SUB MARKUP	0.00% 0.00% 0.00%	ψō	\$0	\$0	\$0	
TOTAL BEFORE C CONTINGENCY BOND PROFIT	ONTINGENC 5.00% 5.00% 10.00%	\$18,689	\$3,569	\$70	\$0	\$22,328 \$1,116 \$1,116 \$2,233
JOB TOTAL						\$26,794

______ Estimate: BLDG 9647 Date: FEBRUARY 2, 1995
Description: CONVENTIONAL SKYLIGHT & CONTROLS
Project: HANGAR STUDY Bid Date: FEBRUARY 2, 1995
Location: BLDG 9647 Job #: 94013.04
Sq. footage: City indx:Raleigh, NC

SUMMARY						
	Manhours	Matl	Labor	Equipment	Sub	Total
=======================================						
U00 U16 ELECTRICAL	0 63	\$15,257 \$2,542	\$1,880 \$1,689	\$70 \$0	\$0 \$0	\$17,207 \$4,231
TOTAL	63	\$17,799	\$3,569	\$70	\$0	\$21,438
SALES TAX MATL MARKUP LABOR MARKUP	5.00% 0.00% 0.00%	\$890 \$0	\$0			
EQUIPT MARKUP SUB MARKUP	0.00%		4.5	\$0	\$0	
TOTAL BEFORE CO CONTINGENCY BOND PROFIT	ONTINGENC 5.00% 5.00% 10.00%	\$18,689	\$3,569	\$70	\$0	\$22,328 \$1,116 \$1,116 \$2,233
JOB TOTAL						\$26,794

NON-RECOMMENDED LIGHTING ANALYSES

LIFE CYCLE COST ANALYSIS SUMMARY

ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP)

INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3 PROJECT NO. & TITLE: 29360 NONBAY LIGHTING UPGRADE @ BLDG 2936 FISCAL YEAR 95 DISCRETE PORTION NAME: LIGHTING ANALYSIS DATE: 02-03-95 ECONOMIC LIFE 10 YEARS PREPARED BY: JAH 1. INVESTMENT A. CONSTRUCTION COST \$ 69808. B. SIOH \$
C. DESIGN COST \$ 3490. 3490. D. TOTAL COST (1A+1B+1C) \$ 76789. E. SALVAGE VALUE OF EXISTING EQUIPMENT \$
F. PUBLIC UTILITY COMPANY REBATE \$
G. TOTAL INVESTMENT (1D - 1E - 1F) 0. 76789. 2. ENERGY SAVINGS (+) / COST (-) DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993 UNIT COST SAVINGS ANNUAL \$ DISCOUNT DISCOUNTED \$/ MWH(1) MWH/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5) FUEL 93. \$ 3239. 8.77
0. \$ 0. 9.26
0. \$ 0. 10.08
0. \$ 0. 10.39
0. \$ 0. 9.39
0. \$ 0. 8.78
\$ 5495. 8.49
93. \$ 8734. A. ELECT \$ 34.95 28403. B. DIST \$.00 0. \$ 0. \$ 0. \$ 0. \$ 0. \$ 46653. \$ 75055. C. RESID \$.00
D. NAT G \$.00
E. COAL \$.00
F. LPG \$.00 M. DEMAND SAVINGS N. TOTAL 3. NON ENERGY SAVINGS(+) / COST(-) \$ 8.49 A. ANNUAL RECURRING (+/-) 484. (1) DISCOUNT FACTOR (TABLE A) (2) DISCOUNTED SAVING/COST (3A X 3A1) 4109. B. NON RECURRING SAVINGS(+) / COSTS(-) SAVINGS(+) YR DISCNT DISCOUNTED

COST(-) OC FACTR SAVINGS(+)/

(1) (2) (3) COST(-)(4) ITEM d. TOTAL \$ 0. C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)\$ 4109. 4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))\$ 8.33 YEARS 5. SIMPLE PAYBACK PERIOD (1G/4) \$ 79164. 6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) 7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.03 (IF < 1 PROJECT DOES NOT QUALIFY) 8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): 3.41 %

FORT BRAGG LIMITED ENERGY STUDY OF HANGAR FACILITIES AT SIMMONS ARMY AIRFIELD ECO 1: INTERIOR / EXTERIOR LIGHTING 16 DECEMBER 1994	FORT BRAGG LIMITED ENERGY STUDY IGAR FACILITIES AT SIMMONS ARMY AIRFIEL ECO 1: INTERIOR / EXTERIOR LIGHTING 16 DECEMBER 1994	Ω
INTERIOR LIGHTING: FLUORE	INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT	
BUILDING #: 2936 - HANGAR	0	
AREA USE: HOURS/DAY 12 DAYS/WEEK 5	DEMAND CHARGE \$0.03495 PER KWH	
EXISTING FIXTURE DATA	REPLACEMENT FIXTURE DATA	
2 FOOT 2 LAMP U @ 92 W/FIXT = 0 WATTS	2 FOOT 0 2 LAMP U @ 58 W/FIXT =	0 WATTS
4 FOOT 94 2 LAMP @ 92 W/FIXT = 8,648 WATTS 3 LAMP @ 137 W/FIXT = 0 WATTS 163 4 LAMP @ 184 W/FIXT = 29,992 WATTS	4 FOOT 348 2 LAMP @ 58 W/FIXT = 163 3 LAMP @ 87 W/FIXT = 0 4 LAMP @ 118 W/FIXT =	20,184 WATTS 14,181 WATTS 0 WATTS
8 FOOT 127 2 LAMP @ 144 W/FIXT = 18,288 WATTS	8 FOOT 0 2 LAMP @ 125 W/FIXT =	0 WATTS
BASELINE ENERGY CONSUMPTION 177,615 KWH/YR	ECO ENERGY CONSUMPTION	107,219 KWH/YR
BASELINE DEMAND 56.93 KW	ECO DEMAND	34.37 KW
NET ENERGY SAVINGS 70,397 KWH/YR	NET DEMAND SAVINGS NET DOLLAR SAVINGS	\$2,504 /YR \$4,965 /YR

\$127 / YEAR (4' FLUORESCENT LAMPS)

\$127 NEAR

NET MAINTENANCE SAVINGS

\$5.00 / 20,000 HOURS *

163 LAMPS @

MAINTENANCE SAVINGS

3,120 HR/YR =

2,184 KWH/YR 0 WATTS 0 WATTS 0 WATTS 500 WATTS 0 WATTS ₹ \$0 MR \$61 MR (MERCURY VAPOR) (HIGH PRESSURE SODIUM) 0.50 OF HANGAR FACILITIES AT SIMMONS ARMY AIRFIELD PER KWH PER KW 250 WATTS = WATTS = WATTS = WATTS = **NET DEMAND SAVINGS NET DOLLAR SAVINGS FORT BRAGG LIMITED ENERGY STUDY** \$0.03495 \$27 / YEAR \$14 / YEAR REPLACEMENT FIXTURE DATA ECO ENERGY CONSUMPTION INTERIOR LIGHTING: LIGHTING REPLACEMENT ELECTRIC COSTS: ENERGY CHARGE DEMAND CHARGE **ECO 1: INTERIOR / EXTERIOR LIGHTING** \$13 N'EAR ECO DEMAND MAINTENANCE SAVINGS 00000 4,380 HR/YR = 4,380 HR/YR = **16 DECEMBER 1994** 3,931 KWH/YR 1,747 KWH/YR Ş **NET MAINTENANCE SAVINGS** 0.90 \$50.00 / 16,000 HOURS * \$38.00 / 24,000 HOURS * 0 WATTS 0 WATTS 0 WATTS 900 WATTS 0 WATTS $\frac{12}{7}$ (1-YES, 0-NO) WATTS = WATTS = WATTS = WATTS = 450 WATTS = BUILDING #: 2936 - HANGAR BASELINE ENERGY CONSUMPTION **NET ENERGY SAVINGS** 2 LAMPS @ EXISTING FIXTURE DATA INCAND @ QUARTZ @_ QUARTZ @_ BASELINE DEMAND AREA USE: HOURS/DAY DAYSWEEK PEAK USE ®® ¥¥

289 KWH/YR (INCANDESCENT) (COMPACT FLUORESCENT) \$33 MR \$124 MR 0.03 KW Э REPLACEMENT SIGNS OF HANGAR FACILITIES AT SIMMONS ARMY AIRFIELD \$0.03495 PER KWH \$9.25 PER KW # OF EXIT SIGNS: WATTAGE: NET DEMAND SAVINGS NET DOLLAR SAVINGS FORT BRAGG LIMITED ENERGY STUDY \$337 / YEAR \$0 / YEAR ECO ENERGY CONSUMPTION INTERIOR LIGHTING: EXIT SIGN REPLACEMENT ELECTRIC COSTS: ENERGY CHARGE DEMAND CHARGE ECO 1: INTERIOR / EXTERIOR LIGHTING 16 DECEMBER 1994 \$337 NEAR **ECO DEMAND** MAINTENANCE SAVINGS 18 0 8,760 HR/YR = HR/YR = FLUORESCENT EXIT SIGNS # OF EXIT SIGNS: WATTAGE: 2,891 KWH/YR 2,602 KWH/YR ₹ **NET MAINTENANCE SAVINGS** 0.33 \$3.50 /1,000 HOURS * /10,000 HOURS * ဓ Ξ BUILDING #: 2936 - HANGAR BASELINE ENERGY CONSUMPTION INCANDESCENT EXIT SIGNS **NET ENERGY SAVINGS** 11 LAMPS @ 0 LAMPS @ # OF EXIT SIGNS: WATTAGE: BASELINE DEMAND

_____ LIGHTING UPGRADE FEBRUARY 2, 1995 Estimate: Date: LIGHTING PRODUCT UPGRADE Description: HANGAR LIGHTING Bid Date: FEBRUARY 2, 1995 Project: BLDG 2936 Job #: Location: 94013.04 City indx: Raleigh, NC Sq. footage: _____ ______ Line # Description Matl Labor Equipment Sub Manhours 0002000000 DEMOLITION, 2X4 FLUORESCENT FIXTURES 184.00 FIXTURE 0.00 13.35 0.00 0.00 13.35 Unit values 0.49 Totals 90.16 \$0 \$2,456 \$0 \$0 \$2,456 0002010000 DEMOLITION, INCANDESCENT FIXTURES/EXIT SIGNS 11.00 FIXTURE 7.10 0.00 7.10 0.00 0.00 Unit values 0.26 \$0 \$78 \$0 \$0 \$78 Totals 2.86 0002020000 DEMOLITION, 1X4 FLUORESCENT FIXTURES 200.00 FIXTURE 0.49 0.00 13.35 0.00 0.00 13.35 Unit values \$0 Totals 98.00 \$0 \$2,670 \$0 \$2,670 1X4 2-32 WATT FLUORESCENT LAMPS, SURFACE 0010000000 13.00 FIXTURE MOUNTED 31.50 60.00 0.00 0.00 91.50 Unit values 1.14 14.82 \$780 \$410 \$0 \$0 \$1,190 Totals 0010100000 2X4 2-32 WATT FLUORESCENT LAMPS, RECESSED MOUNTED 21.00 FIXTURE Unit values 1.51 59.00 41.50 0.00 0.00 100.50 31.71 \$1,239 \$872 \$0 \$0 \$2,111 Totals 1X4 2-32 WATT FLUORESCENT LAMPS, RECESSED 0010200000 45.00 FIXTURE MOUNTED 82.50 0.00 31.50 Unit values 1.14 51.00 0.00 \$0 \$3,713 Totals 51.30 \$2,295 \$1,418 \$0 0010300000 1X4 2-32 WATT FLUORESCENT LAMPS, WALL MOUNTED 3.00 FIXTURE 0.00 0.00 91.50 60.00 31.50 Unit values 1.14 \$275 \$95 \$0 \$0 \$180 Totals 3.42 1X4 2-32 WATT FLUORESCENT LAMPS, PENDANT 0010400000 266.00 FIXTURE MOUNTED 31.50 0.00 70.50 39.00 0.00 Unit values 1.14 \$0 \$18,753 303.24 \$10,374 \$8,379 \$0 Totals 0010500000 2X4 2-32 WATT FLUORESCENT LAMPS, RECESSED 163.00 FIXTURE MOUNTED WITH REFLECTORS

03-Feb-95		Page 2				
Unit values Totals	1.51 246.13	75.00 \$12,225	41.50 \$6,765	0.00 \$0	0.00	
0010700000	LED EXIT	SIGN, RETR	OFIT KIT			
Unit values Totals		35.00 \$385	27.50 \$303	0.00 \$0	0.00	FIXTURE 62.50 \$688
0010800000				EXTERIOR		
Unit values Totals	2.00	TED FIXTUR 214.00 \$428	E 55.00 \$110	0.00 \$0	0.00	FIXTURE 269.00 \$538
0050000000	1 1 / / 4 11 15	TAMBODED	• • •	•	100 00	T 19
Unit values Totals	0.08		2.20 \$220			3.36 \$336
0050100000	CONTACTOR	s, LIGHTIN	G, 600 VOLT	3 POLE,		
Unit values Totals	2.00		20 AMP 55.00 \$275			EA. 192.00 \$960
0050200000	TOGGLE SW	ITCH, SING	LE POLE, 15	AMP		
Unit values Totals	0.00	7.33	reel outlet 34.08 \$511	0.00	0.00	41.41 \$621

WIRE, 600 VOLT TYPE THW, COPPER SOLID #12

GENERAL EQUIPMENT RENTAL, AERIAL LIFT,

7.65

\$765

0.00

\$0

SCISSOR TYPE, TO 60' HIGH

20.00

0.00

\$0

\$2,000

0.00

550.00

\$550

\$0

0050300000

Unit values

0050400000

Unit values

Totals

Totals

0.73 72.70

0.00

0.00

100.00 C.L.F.

0.00

0.00

\$0

\$0

1.00 DAY

27.65

\$2,765

550.00

\$550

Line #	Descripti	on				
	Manhours	Matl	Labor	Equipment	Sub	Total
U00	948	\$29,582	\$26,562	\$550	\$0	\$56,694
ESTIMATE TOTAL	948	\$29,582	\$26,562	\$550	\$0	\$56,694
SALES TAX MATL MARKUP LABOR MARKUP EQUIPT MARKUP SUB MARKUP	5.00% 0.00% 0.00% 0.00% 0.00%	\$1,479 \$0	\$0	\$0	\$0	
TOTAL BEFORE C CONTINGENCY BOND PROFIT	ONTINGENC 5.00% 5.00% 10.00%	\$31,061	\$26,562	\$550	\$0	\$58,173 \$2,909 \$2,909 \$5,817
JOB TOTAL						\$69,808

Estimate: LIGHTING UPGRADE Date: FEBRUARY 2, 1995
Description: LIGHTING PRODUCT UPGRADE
Project: HANGAR LIGHTING Bid Date: FEBRUARY 2, 1995
Location: BLDG 2936 Job #: 94013.04
Sq. footage: City indx:Raleigh, NC

	•	30.13	* - 1	 0	m - 1 - 3
	St	UMMARY			

	Manhours	Matl	Labor	Equipment	Sub	Total
UOO	948	\$29,582	\$26,562	\$550	\$0	\$56,694
TOTAL	948	\$29,582	\$26,562	\$550	\$0	\$56,694
SALES TAX MATL MARKUP LABOR MARKUP	5.00% 0.00% 0.00%	\$1,479 \$0	\$0			
EQUIPT MARKUP	0.00% 0.00%			\$0	\$0	
TOTAL BEFORE CONTINGENCY BOND PROFIT	CONTINGENC 5.00% 5.00% 10.00%	\$31,061	\$26,562	\$550	\$0	\$58,173 \$2,909 \$2,909 \$5,817
JOB TOTAL						\$69,808

ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID FY95 (92)
INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3 PROJECT NO. & TITLE: 3007H NONBAY LIGHTING UPGRADE @ BLDG 3007 FISCAL YEAR 95 DISCRETE PORTION NAME: LIGHTING ANALYSIS DATE: 02-03-95 ECONOMIC LIFE 10 YEARS PREPARED BY: JAH 1. INVESTMENT A. CONSTRUCTION COST 26016. 1301. B. SIOH \$ C. DESIGN COST 1301. D. TOTAL COST (1A+1B+1C) \$ E. SALVAGE VALUE OF EXISTING EQUIPMENT \$ 0. F. PUBLIC UTILITY COMPANY REBATE 0. G. TOTAL INVESTMENT (1D - 1E - 1F) 28618. 2. ENERGY SAVINGS (+) / COST (-) DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993 UNIT COST SAVINGS ANNUAL \$ DISCOUNTED FUEL \$/ MWH(1) MWH/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5) A. ELECT \$ 34.95 29.

B. DIST \$.00 0.

C. RESID \$.00 0.

D. NAT G \$.00 0.

E. COAL \$.00 0.

F. LPG \$.00 0. \$ 1008. 8.77 8844. \$ 0. \$ 0. \$ 0. \$ 0. \$ 0. \$ 934. \$ 1942. 9.26 0. 10.08 0. 10.39 0. 9.39 0. 8.78 0. 8.49 M. DEMAND SAVINGS 7930. 29. \$ N. TOTAL 16773. 3. NON ENERGY SAVINGS(+) / COST(-) A. ANNUAL RECURRING (+/-) 553. (1) DISCOUNT FACTOR (TABLE A) 8.49 (2) DISCOUNTED SAVING/COST (3A X 3A1) 4695. B. NON RECURRING SAVINGS(+) / COSTS(-) SAVINGS(+) YR DISCNT DISCOUNTED

COST(-) OC FACTR SAVINGS(+),

(1) (2) (3) COST(-)(4) ITEM SAVINGS(+)/ d. TOTAL Ŝ 0. C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)\$ 4695. 4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))\$ 2495. 11.47 YEARS 5. SIMPLE PAYBACK PERIOD (1G/4) 6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) \$ 21468. 7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= .75 (IF < 1 PROJECT DOES NOT QUALIFY) 8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): .18 %

LIFE CYCLE COST ANALYSIS SUMMARY

STUDY: 30070

KWH/YR 64 WATTS 10,208 WATTS 174 WATTS 0 WATTS 0 WATTS 0 WATTS \$883 IYR \$1,751 IYR 10.45 KW 32,592 OF HANGAR FACILITIES AT SIMMONS ARMY AIRFIELD PER KWH PER KW 32 W/FIXT = 58 W/FIXT = 87 W/FIXT = 118 W/FIXT = 58 W/FIXT = 125 W/FIXT NET DEMAND SAVINGS NET DOLLAR SAVINGS FORT BRAGG LIMITED ENERGY STUDY \$0.03495 REPLACEMENT FIXTURE DATA ECO ENERGY CONSUMPTION INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT 0 2 LAMP U @ 2 1 LAMP @ 176 2 LAMP @ 2 3 LAMP @ 4 LAMP @ ELECTRIC COSTS: ENERGY CHARGE DEMAND CHARGE 0 2 LAMP @ **ECO 1: INTERIOR / EXTERIOR LIGHTING ECO DEMAND** MAINTENANCE SAVINGS 8 FOOT 2 F00T 4 FOOT **16 DECEMBER 1994** 57,424 KWH/YR 24,832 KWH/YR Š 18.41 12,604 WATTS 5,343 WATTS 368 WATTS 0 WATTS 90 WATTS 0 WATTS 45 W/FIXT = 92 W/FIXT = 137 W/FIXT = 184 W/FIXT = 92 W/FIXT = 144 W/FIXT = 3007 - HANGAR BASELINE ENERGY CONSUMPTION **NET ENERGY SAVINGS** 7 2 EXISTING FIXTURE DATA 2 LAMP U @ BUILDING #: AREA USE: HOURS/DAY 2 1 LAMP @ 137 2 LAMP @ 39 3 LAMP @ 2 4 LAMP @ BASELINE DEMAND DAYSWEEK 2 LAMP @ 2 FOOT 4 F00T

(4' FLUORESCENT LAMPS)

\$32 / YEAR

3,120 HRYR=

\$32 MEAR

NET MAINTENANCE SAVINGS

\$5.00 / 20,000 HOURS •

41 LAMPS @

447 KWH/YR (INCANDESCENT) (COMPACT FLUORESCENT) 0.05 KW \$51 /YR \$191 /YR 17 က REPLACEMENT SIGNS OF HANGAR FACILITIES AT SIMMONS ARMY AIRFIELD PER KWH PER KW # OF EXIT SIGNS: WATTAGE: NET DEMAND SAVINGS NET DOLLAR SAVINGS \$0.03495 FORT BRAGG LIMITED ENERGY STUDY \$521 / YEAR \$0 / YEAR ECO ENERGY CONSUMPTION ELECTRIC COSTS: ENERGY CHARGE DEMAND CHARGE INTERIOR LIGHTING: EXIT SIGN REPLACEMENT ECO 1: INTERIOR / EXTERIOR LIGHTING 16 DECEMBER 1994 \$521 NEAR **ECO DEMAND** MAINTENANCE SAVINGS 0 18 8,760 HR/YR = HR/YR = FLUORESCENT EXIT SIGNS # OF EXIT SIGNS: WATTAGE: 4,468 KWH/YR 4,021 KWH/YR 0.51 KW **NET MAINTENANCE SAVINGS** \$3.50 / 1,000 HOURS * / 10,000 HOURS * 8 17 BUILDING #: 3007 - HANGAR INCANDESCENT EXIT SIGNS BASELINE ENERGY CONSUMPTION **NET ENERGY SAVINGS** 17 LAMPS @ LAMPS @ # OF EXIT SIGNS: WATTAGE: BASELINE DEMAND

Estimate: LIGHTING UPGRADE FEBRUARY 2, 1995 Date: Description: LIGHTING PRODUCT UPGRADE Project: HANGAR LIGHTING Bid Date: FEBRUARY 2, 1995 Location: BLDG 3007 Job #: 94013.04 Sq. footage: City indx: Raleigh, NC Line # Description Manhours Matl Labor Equipment Sub 0002000000 DEMOLITION, 2X4 FLUORESCENT FIXTURES 145.00 FIXTURE Unit values 0.49 0.00 13.35 0.00 0.00 13.35 Totals 71.05 \$0 \$1,936 \$0 \$0 \$1,936 0002010000 DEMOLITION, INCANDESCENT FIXTURES/EXIT SIGNS 17.00 FIXTURE Unit values 0.00 0.00 0.26 7.10 0.00 7.10 Totals 4.42 \$0 \$121 \$0 \$0 \$121 0002020000 DEMOLITION, 1X4 FLUORESCENT FIXTURES 33.00 FIXTURE 0.00 Unit values 0.49 13.35 0.00 0.00 13.35 Totals 16.17 \$0 \$441 \$0 \$0 \$441 0010100000 2X4 2-32 WATT FLUORESCENT LAMPS, RECESSED MOUNTED 104.00 FIXTURE 100.50 Unit values 1.51 59.00 41.50 0.00 0.00 Totals \$4,316 157.04 \$6,136 \$0 \$0 \$10,452 0010400000 1X4 2-32 WATT FLUORESCENT LAMPS, PENDANT MOUNTED 33.00 FIXTURE Unit values 1.14 39.00 31.50 0.00 0.00 70.50 Totals 37.62 \$1,287 \$1,040 \$0 \$0 \$2,327 0010500000 2X4 2-32 WATT FLUORESCENT LAMPS, RECESSED MOUNTED WITH REFLECTORS 39.00 FIXTURE Unit values 1.51 75.00 41.50 0.00 0.00 116.50 Totals \$1,619 58.89 \$2,925 \$0 \$0 \$4,544 0010700000 LED EXIT SIGN, RETROFIT KIT 17.00 FIXTURE Unit values 35.00 27.50 0.00 0.00 62.50 1.00 Totals 17.00 \$595 \$468 \$0 \$0 \$1,063 0011400000 2X4 3-32 WATT FLUORESCENT LAMPS, SURFACE MOUNTED WITH REFLECTOR 2.00 FIXTURE 0.00 120.50 79.00 41.50 0.00 Unit values 1.51 Totals \$0 \$0 \$241 3.02 \$158 \$83

Line #	Descripti	on				
	Manhours	Matl	Labor	Equipment	Sub	Total
000	366	\$11,101	\$10,024	\$0	\$0	\$21,125
ESTIMATE TOTAL	366	\$11,101	\$10,024	\$0	\$0	\$21,125
SALES TAX MATL MARKUP LABOR MARKUP EQUIPT MARKUP SUB MARKUP	5.00% 0.00% 0.00% 0.00% 0.00%	\$555 \$0	\$0	\$0	\$0	
TOTAL BEFORE COCONTINGENCY BOND PROFIT	ONTINGENC 5.00% 5.00% 10.00%	\$11,656	\$10,024	\$0	\$0	\$21,680 \$1,084 \$1,084 \$2,168
JOB TOTAL						\$26,016

Estimate: LIGHTING UPGRADE Date:
Description: LIGHTING PRODUCT UPGRADE
Project: HANGAR LIGHTING Bid Date:

FEBRUARY 2, 1995

BLDG 3007

Bid Date: FEBRUARY 2, 1995

Location:

Job #: 94013.04

Sq. footage: City indx:Raleigh, NC

SUMMARY								
	Manhours	Matl	Labor	Equipment	Sub	Total		
U00	366	\$11,101	\$10,024	\$0	\$0	\$21,125		
TOTAL	366	\$11,101	\$10,024	\$0	\$0	\$21,125		
SALES TAX MATL MARKUP	5.00% 0.00%	\$555 \$0	¢ o					
LABOR MARKUP EQUIPT MARKUP SUB MARKUP	0.00% 0.00% 0.00%		\$0	\$0	\$0			
TOTAL BEFORE C CONTINGENCY BOND PROFIT	ONTINGENC 5.00% 5.00% 10.00%	\$11,656	\$10,024	\$0	\$0	\$21,680 \$1,084 \$1,084 \$2,168		
JOB TOTAL						\$26,016		

7 ECOS- 2, 3, & 4 ENERGY CALCULATIONS

LIMITED ENERGY STUDY OF HANGAR FACILITIES AT SIMMONS ARMY AIRFIELD, FT. BRAGG, NC

This section contains the baseline energy calculations and energy calculations for ECOs 2, 3, and 4. The calculations were performed using the DOE Building Simulation program. The DOE program simulates a building's annual energy performance by modeling all energy consuming systems within that building. Heating and cooling loads are calculated on an hourly basis using local weather data. The user inputs criteria such as building envelope materials, lighting and occupant loading, HVAC equipment type and zoning. Details of the user input data and assumptions in the simulations can be found in Section 5.3 of the report. The output from these simulations is contained in this section and is sorted by building. Within each building, the output is sorted in the following order: Baseline, ECO-2, ECO-3, ECO-4.

LCCA AND COST ESTIMATES: (sorted by building)

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																				 						 	7-1	3
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																				 							7-2	8
																				 						 	7-3	1
																				 						 	7-3	5
																				 						 	7-3	9
																				 						 	7-4	3
																				 						 	7-4	6
																				 							7-4	9
																												7

2936.SIM 12/2/94 Page 1

BANGAR 2936

FT BRAGG ENERGY STUDY

SIMMONS ARMY AIRFIELD BASE CASE

DOF-2.1C 11/30/1994 12: 9:39 PDL RUN 1

PRESENT ENERGY USAGE

WEATHER FILE- TMY RALEIGH, NC

RT- BEPS ESTIMATED BUILDING ENERGY PERFORMANCE

ENERGY TYPE IN SITE MBTU -	ELECTRICITY	FUEL-OIL
CATEGORY OF USE		
SPACE HEAT	288.05	7113.39
SPACE COOL	643.87	0.00
HVAC AUX	650.92	0.00
DOH HOT WTR	0.00	0.00
AUX SOLAR	0.00	0.00
LIGHTS	1096.88	0.00
VERT TRANS	0.00	0.00
MISC EQUIP	163.37	0.00
TOTAL	2843.08	7113.39

TOTAL SITE ENERGY 9956.53 MBTU 157.5 KBTU/SQFT-YR GROSS-AREA 157.5 KBTU/SQFT-YR NET-AREA TOTAL SOURCE ENERGY 15651.33 MBTU 247.5 KBTU/SQFT-YR GROSS-AREA 247.5 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 41.9 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.2

2936ECO2.SIN 12/2/94

BANGAR 2936

Page 1

FT BRAGG ENERGY STUDY

SIMMONS ARMY AIRFIELD

ECO-2

DOE-2.1C 11/30/1994 13:56:55 PDL RUN 1

NG BLRS & IR HEAT

WEATHER FILE- THY RALEIGH, NC

RT- BEPS ESTIMATED BUILDING ENERGY PERFORMANCE

ENERGY TYPE IN SITE MBTU -	ELECTRICITY	NATURAL-GAS
CATEGORY OF USE		
SPACE HEAT	173.17	3746.78
SPACE COOL	643.88	0.00
HVAC AUX	634.68	0.00
DON HOT WTR	0.00	0.00
AUX SOLAR	0.00	0.00
LIGHTS	1096.88	0.00
VERT TRANS	0.00	0.00
MISC EQUIP	163.37	0.00
TOTAL	2711.98	3746.78
JAIOI	2/11.98	3/40./8

TOTAL SITE ENERGY 6458.80 MBTU 102.1 KBTU/SQFT-YR GROSS-AREA 102.1 KBTU/SQFT-YR NET-AREA TOTAL SOURCE ENERGY 11890.99 MBTU 188.1 KBTU/SQFT-YR GROSS-AREA 188.1 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 0.0 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.2

2936ECO3.SIN 12 2/94 Page 1 FT BRAGG ENERGY STUDY

P1 UGAR 2936

SIMMONS ARMY AIRFIELD

ECO-3

ELECTRIC IR HEAT

DOE-2.1C 12/1/1994 13:59:22 PDL RUN 1

WEATHER FILE- TMY RALEIGH, NC

RT- BEPS ESTIMATED BUILDING ENERGY PERFORMANCE

ENERGY TYPE IN SITE MBTU -	ELECTRICITY	FUEL-OIL
CATEGORY OF USE		
SPACE HEAT	2035.53	205.77
SPACE COOL	643.88	0.00
HVAC AUX	557.27	0.00
DOM HOT WTR	0.00	0.00
AUX SOLAR	0.00	0.00
LIGHTS	1096.88	0.00
VERT TRANS	0.00	0.00
MISC EQUIP	163.37	0.00
TOTAL	4496.93	205.77

TOTAL SITE ENERGY 4702.74 MBTU 74.4 KBTU/SQFT-YR GROSS-AREA 74.4 KBTU/SQFT-YR NET-AREA TOTAL SOURCE ENERGY 13710.19 MBTU 216.8 KBTU/SQFT-YR GROSS-AREA 216.8 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 20.2 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED

2936ECO4.SIM 12/12/94 Page 1

FI BRAGG ENERGY STUDY GAR 2936

SIMMONS ARMY AIRFIELD

ECO-4

REPORT- BEPS ESTIMATED BUILDING ENERGY PERFORMANCE

DOE-2.1C 12/ 8/1994 11:34:24 PDL RUN 1

HVAC RENOVATIONS

WEATHER FILE- THY RALEIGH, NC

ENERGY TYPE IN SITE MBTU -	ELECTRICITY	FUEL-OIL
CATEGORY OF USE		
SPACE HEAT	287.90	7109.63
SPACE COOL	488.41	0.00
HVAC AUX	511.10	0.00
DOM HOT WTR	0.00	0.00
AUX SOLAR	0.00	0.00
LIGHTS	1096.88	0.00
VERT TRANS	0.00	0.00
MISC EQUIP	163.37	0.00
TOTAL	2547.67	7109.63

TOTAL SOURCE ENERGY 14760.54 MBTU 233.4 KBTU/SQFT-YR GROSS-AREA 233.4 KBTU/SQFT-YR NET-AREA

TOTAL SITE ENERGY 9657.38 MBTU 152.7 KBTU/SQFT-YR GROSS-AREA 152.7 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 41.9 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.1

3007.SIM

HANGAR 3007

12/2 '94

Page 1

FT BRAGG ENERGY STUDY

SIMMONS ARMY AIRFIELD

BASE CASE

DEFORME EMERGY HOLOR

DOE-2.1C 12/ 2/1994 10:29:57 PDL RUN 1

PRESENT ENERGY USAGE

SE .

WEATHER FILE- TMY RALEIGH, NC

DRT- BEPS ESTIMATED BUILDING ENERGY PERFORMANCE

ENERGY TYPE IN SITE MBTU -	ELECTRICITY	FUEL-OIL
CATEGORY OF USE		
SPACE HEAT	271.56	7794.15
SPACE COOL	184.35	0.00
HVAC AUX	496.89	0.00
DOM HOT WIR	0.00	231.98
AUX SOLAR	0.00	0.00
LIGHTS	1082.79	0.00
VERT TRANS	0.00	0.00
MISC EQUIP	218.58	0.00
TOTAL	2254.17	8026.13

TOTAL SITE ENERGY 10280.29 MBTU 205.1 KBTU/SQFT-YR GROSS-AREA 205.1 KBTU/SQFT-YR NET-AREA TOTAL SOURCE ENERGY 14795.40 MBTU 295.1 KBTU/SQFT-YR GROSS-AREA 295.1 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 69.2
PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

3007EC02.SIH 12/2/94 FT BRAGG ENERGY STUDY

<u>HA</u>NGAR 3007

Page 1

SIMMONS ARMY AIRFIELD

ECO-2

DRT- BEPS ESTIMATED BUILDING ENERGY PERFORMANCE

DOE-2.1C 12/ 2/1994 12:17:49 PDL RUN 1 NG BOILERS & INFRA-RED RADIANT HEAT

WEATHER FILE- THY RALEIGH, NC

ENERGY TYPE IN SITE MBTU -	ELECTRICITY	NATURAL-GAS
CATEGORY OF USE		
SPACE HEAT	211.44	4598.27
SPACE COOL	184.35	0.00
HVAC AUX	482.10	0.00
DOM HOT WTR	4.38	81.61
AUX SOLAR	0.00	0.00
LIGHTS	1082.79	0.00
VERT TRANS	0.00	0.00
MISC EQUIP	218.58	0.00
TOTAL	2183.64	4679.88

TOTAL SITE ENERGY 6863.52 MBTU 136.9 KBTU/SQFT-YR GROSS-AREA 136.9 KBTU/SQFT-YR NET-AREA

TOTAL SOURCE ENERGY 11237.35 MBTU 224.2 KBTU/SQFT-YR GROSS-AREA 224.2 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 63.4 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

3007EC03.SIM 12/2/94 Page 1

FT BRAGG ENERGY STUDY HANGAR 3007

SIMMONS ARMY AIRFIELD

ECO-3

DRT- BEPS ESTIMATED BUILDING ENERGY PERFORMANCE

DOE-2.1C 12/2/1994 8:50: 8 PDL RUN 1

ELECTRIC IR HEAT

WEATHER FILE- TMY RALEIGH, NC

ENERGY TYPE IN SITE MBTU -	ELECTRICITY	FUEL-OIL
CATEGORY OF USE		
SPACE HEAT	1375.52	1278.74
SPACE COOL	184.35	0.00
HVAC AUX	394.54	0.00
DOM HOT WIR	0.00	0.00
AUX SOLAR	0.00	0.00
LIGHTS	1082.80	0.00
VERT TRANS	0.00	0.00
MISC EQUIP	218.58	0.00
TOTAL	3255.78	1278.74

TOTAL SOURCE ENERGY 11055.77 MBTU 220.5 KBTU/SQFT-YR GROSS-AREA 220.5 KBTU/SQFT-YR NET-AREA

TOTAL SITE ENERGY 4534.49 MBTU 90.4 KBTU/SQFT-YR GROSS-AREA 90.4 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 63.4 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

3262.SIM FT BRAGG ENERGY STUDY

HANGAR 3262

12/2/94 Page 1 ENERGY STUDY SIMMONS ARMY AIRFIELD

BASE CASE

DOE-2.1C 11/29/1994 13:46:27 PDL RUN 1 PRESENT ENERGY USAGE

WEATHER FILE- TMY RALEIGH, NC

RT- BEPS ESTIMATED BUILDING ENERGY PERFORMANCE

ENERGY TYPE IN SITE MBTU -	ELECTRICITY	FUEL-OIL
CATEGORY OF USE		
SPACE HEAT	192.19	11447.33
SPACE COOL	366.32	0.00
HVAC AUX	671.63	0.00
DOM HOT WTR	0.00	0.00
AUX SOLAR	0.00	0.00
LIGHTS	1096.89	0.00
VERT TRANS	0.00	0.00
MISC EQUIP	185.21	0.00
TOTAL	2512.24	11447.33

TOTAL SITE ENERGY 13959.52 MBTU 224.1 KBTU/SQFT-YR GROSS-AREA 224.1 KBTU/SQFT-YR NET-AREA TOTAL SOURCE ENERGY 18991.77 MBTU 304.9 KBTU/SQFT-YR GROSS-AREA 304.9 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 38.7 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 24.6

3262EC02.SIH 12/2/94

HANGAR 3262

Page 1

FT BRAGG ENERGY STUDY

SIMMONS ARMY AIRFIELD

ECO-2

NG BLRS & IR HEAT WEATHER FILE- TMY RALEIGH, NC

DOE-2.1C 11/30/1994 14:26:39 PDL RUN 1

ORT- BEPS ESTIMATED BUILDING ENERGY PERFORMANCE

ENERGY TYPE IN SITE MBTU -	ELECTRICITY	NATURAL-GAS
CATEGORY OF USE		
SPACE HEAT	192.19	9128.09
SPACE COOL	366.32	0.00
HVAC AUX	597.94	0.00
DON HOT WTR	0.00	0.00
AUX SOLAR	0.00	0.00
LIGHTS	1096.90	0.00
VERT TRANS	0.00	0.00
MISC EQUIP	185.21	0.00
TOTAL	2438.57	9128.09
TOTAL	2436.37	3179.03

TOTAL SITE ENERGY 11566.79 MBTU 185.7 KBTU/SQFT-YR GROSS-AREA 185.7 KBTU/SQFT-YR NET-AREA TOTAL SOURCE ENERGY 16451.44 MBTU 264.2 KBTU/SQFT-YR GROSS-AREA 264.2 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 11.9 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 13.2

3262EC03.SIN 12/2/94

Page 1

FT BRAGG ENERGY STUDY HANGAR 3262

SIMMONS ARMY AIRFIELD

ECO-3

DRT- BEPS ESTIMATED BUILDING ENERGY PERFORMANCE

DOF-2.1C 12/ 1/1994 14:23:31 PDL RUN 1

ELECTRIC IR HEAT

WEATHER FILE- TMY RALEIGH, NC

ENERGY TYPE IN SITE MBTU -	ELECTRICITY	FUEL-OIL
CATEGORY OF USE		
SPACE HEAT	3384.29	4542.27
SPACE COOL	366.32	0.00
HVAC AUX	447.43	0.00
DOM HOT WTR	0.00	0.00
AUX SOLAR	0.00	0.00
LIGHTS	1096.89	0.00
VERT TRANS	0.00	0.00
HISC EQUIP	185.21	0.00
TOTAL	5480.14	4542.27

TOTAL SITE ENERGY 10022.43 MBTU 160.9 KBTU/SQFT-YR GROSS-AREA 160.9 KBTU/SQFT-YR NET-AREA

TOTAL SOURCE ENERGY 20999.23 MBTU 337.2 KBTU/SQFT-YR GROSS-AREA 337.2 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 37.4 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

3262EC04.SIM 12/12/94

Page 1

FT BRAGG ENERGY STUDY SIMMONS ARMY AIRFIELD IGAR 3262

ECO-4

REPORT- BEPS ESTIMATED BUILDING ENERGY PERFORMANCE

DOE-2.1C 12/8/1994 13:47: 9 PDL RUN 1 VAV RETROFIT

WEATHER FILE- THY RALEIGH, NC

ENERGY TYPE IN SITE MBTU -	ELECTRICITY	FUEL-OIL
CATEGORY OF USE		
SPACE HEAT	189.66	9387.93
SPACE COOL	508.57	0.00
HVAC AUX	754.43	0.00
DON HOT WTR	0.00	0.00
AUX SOLAR	0.00	0.00
LIGHTS	1096.89	0.00
VERT TRANS	0.00	0.00
HISC EQUIP	185.21	0.00
TOTAL	2734.76	9387.93

TOTAL SITE ENERGY 12122.82 MBTU 194.7 KBTU/SQFT-YR GROSS-AREA 194.7 KBTU/SQFT-YR NET-AREA TOTAL SOURCE ENERGY 17600.77 MBTU 282.6 KBTU/SQFT-YR GROSS-AREA 282.6 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 37.4 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 10.4

3354.SIN

12/2/94

Page 1

FT BRAGG ENERGY STUDY HANGAR 3354

SIMMONS ARMY AIRFIELD

BASE CASE

DOF-2.1C 11 14
PRESENT ENERGY USAGE DOE-2.1C 11 14 1994 15:48:24 PDL RUN 1

WEATHER FILE- TMY RALEIGH, NC

PRT- BEPS ESTIMATED BUILDING ENERGY PERFORMANCE

ENERGY TYPE IN SITE MBTU -	ELECTRICITY	FUEL-OIL
CATEGORY OF USE		
SPACE HEAT	312.76	4593.35
SPACE COOL	224.21	0.00
HVAC AUX	83.28	0.00
DOM HOT WTR	0.00	0.00
AUX SOLAR	0.00	0.00
LIGHTS	572.26	0.00
VERT TRANS	0.00	0.00
MISC EQUIP	111.01	0.00
TOTAL	1303.52	4593.35

TOTAL SITE ENERGY 5896.84 MBTU 177.8 KBTU/SQFT-YR GROSS-AREA 177.8 KBTU/SQFT-YR NET-AREA

TOTAL SOURCE ENERGY 8507.73 MBTU 256.6 KBTU/SQFT-YR GROSS-AREA 256.6 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 14.9 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED

3354ECO2.SIN 12/2/94 Page 1 FT BRAGG ENERGY STUDY SIMMONS

HANGAR 3354

SIMMONS ARMY AIRFIELD

ECO-2

DOE-2.1C 11/30/1994 14:56:49 PDL RUN 1 N G BLRS & IR HEAT

WEATHER FILE- TMY RALEIGH, NC

DRT- BEPS ESTIMATED BUILDING ENERGY PERFORMANCE

ENERGY TYPE IN SITE MBTU -	ELECTRICITY	NATURAL-GAS
CATEGORY OF USE		
SPACE HEAT	419.17	2865.93
SPACE COOL	224.21	0.00
HVAC AUX	80.35	0.00
DOM HOT WTR	0.00	0.00
AUX SOLAR	0.00	0.00
LIGHTS	572.26	0.00
VERT TRANS	0.00	0.00
MISC EQUIP	111.01	0.00
TOTAL	1407.01	2865.93

TOTAL SOURCE ENERGY 7091.07 MBTU 213.8 KBTU/SQFT-YR GROSS-AREA

TOTAL SITE ENERGY 4272.90 MBTU 128.9 KBTU/SQFT-YR GROSS-AREA 128.9 KBTU/SQFT-YR NET-AREA 213.8 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 7.8 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

3354ECO3.SIN 12/2/94

HANGAR 3354

Page 1

FT BRAGG ENERGY STUDY

SIMMONS ARMY AIRFIELD

ECO-3

PRT- BEPS ESTIMATED BUILDING ENERGY PERFORMANCE

DOE-2.1C 12/1/1994 15:12:58 PDL RUN 1

ELECTRIC IR HEAT

WEATHER FILE- TMY RALEIGH, NC

ENERGY TYPE IN SITE MBTU -	ELECTRICITY	FUEL-OIL
CATEGORY OF USE		
SPACE HEAT	797.95	1766.66
SPACE COOL	224.21	0.00
HVAC AUX	41.89	0.00
DOM EOT WTR	0.00	0.00
AUY SOLAR	0.00	0.00
LIGHTS	572.26	0.00
VERT TRANS	0.00	0.00
MISC EQUIP	111.01	0.00

TOTAL SITE ENERGY 3513.95 MBTU 106.0 KBTU/SQFT-YR GROSS-AREA 106.0 KBTU/SQFT-YR NET-AREA

TOTAL SOURCE ENERGY 7013.78 MBTU 211.5 KBTU/SQFT-YR GROSS-AREA 211.5 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 7.8 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

TOTAL 1747.32 1766.66

3354ECO4.SIM 12/12/94 Page 1
FT BRAGG ENERGY STUDY SIMMONS ARMY AIRFIELD
ENDORGOUS 3354 FCO-4

HANGAR 3354

FAN COILS

DOE-2.1C 12/8/1994 15:54:34 PDL RUN 1

PORT- BEPS ESTIMATED BUILDING ENERGY PERFORMANCE

WEATHER FILE- THY RALEIGH, NC

ENERGY TYPE IN SITE MBTU -	ELECTRICITY	FUEL-OIL
CATEGORY OF USE		
SPACE HEAT	176.96	4849.53
SPACE COOL	121.67	0.00
HVAC AUX	107.51	0.00
DON HOT WTR	0.00	0.00
AUX SOLAR	0.00	0.00
LIGHTS	572.27	0.00
VERT TRANS	0.00	0.00
MISC EQUIP	111.01	0.00
TOTAL	1089.42	4849.53

TOTAL SOURCE ENERGY 8120.93 MBTU 244.9 KBTU/SQFT-YR GROSS-AREA 244.9 KBTU/SQFT-YR NET-AREA

TOTAL SITE ENERGY 5938.91 MBTU 179.1 KBTU/SQFT-YR GROSS-AREA 179.1 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 14.8 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED

3637.SIM

HANGAR 3637

12/1/94

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FT BRAGG ENERGY STUDY

SIMMONS ARMY AIRFIELD

BASE CASE

ORT- BEPS ESTIMATED BUILDING ENERGY PERFORMANCE

DOE-2.1C 12: 1/1994 12:30:50 PDL RUN 1

PRESENT ENERGY USAGE

WEATHER FILE- TMY RALEIGH, NC

ENERGY TYPE IN SITE MBTU -	ELECTRICITY	FUEL-OIL
CATEGORY OF USE		
SPACE HEAT	158.60	3567.65
SPACE COOL	96.80	0.00
HVAC AUX	60.15	0.00
DOM HOT WTR	0.00	0.00
AUX SOLAR	0.00	0.00
LIGHTS	357.33	0.00
VERT TRANS	0.00	0.00
MISC EQUIP	264.61	0.00
TOTAL	937.50	3567.65

TOTAL SITE ENERGY 4505.13 MBTU 240.3 KBTU/SQFT-YR GROSS-AREA 240.3 KBTU/SQFT-YR NET-AREA TOTAL SOURCE ENERGY 6382.91 MBTU 340.4 KBTU/SQFT-YR GROSS-AREA 340.4 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 97.3 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

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FT BRAGG ENERGY STUDY HANGAR 3637

SIMMONS ARMY AIRFIELD

ECO-2

NG BOILERS & INFRA-RED RADIANT HEAT

WEATHER FILE- THY RALEIGH, NC

DOE-2.1C 12/1/1994 12:51:18 PDL RUN 1

ORT- BEPS ESTIMATED BUILDING ENERGY PERFORMANCE

ENERGY TYPE IN SITE MBTU -	ELECTRICITY	NATURAL-GAS
CATEGORY OF USE		
SPACE HEAT	111.85	1959.77
SPACE COOL	66.41	0.00
HVAC AUX	45.22	0.00
DOM HOT WTR	0.00	0.00
AUX SOLAR	0.00	0.00
LIGHTS	357.33	0.00
VERT TRANS	0.00	0.00
HISC EQUIP	264.61	0.00
TOTAL	845.42	1959.77

TOTAL SITE ENERGY 2907.91 MBTU 155.1 KBTU/SQFT-YR GROSS-AREA 155.1 KBTU/SQFT-YR NET-AREA TOTAL SOURCE ENERGY 4807.03 MBTU 256.4 KBTU/SQFT-YR GROSS-AREA 256.4 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 97.3 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

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12/2/94

Page 1

FT BRAGG ENERGY STUDY BANGAR 3637

SIMMONS ARMY AIRFIELD

ECO-3

RT- BEPS ESTIMATED BUILDING ENERGY PERFORMANCE

DOE-2.1C 12/2/1994 10:22:55 PDL RUN 1

ELECTRIC IR HEAT

WEATHER FILE- THY RALEIGH, NC

ENERGY TYPE IN SITE MBTU -	ELECTRICITY	FUEL-OIL
CATEGORY OF USE		
SPACE HEAT	622.87	553.78
SPACE COOL	88.97	0.00
HVAC AUX	11.14	0.00
DOM HOT WTR	0.00	0.00
AUX SOLAR	0.00	0.00
LIGHTS	357.33	0.00
VERT TRANS	0.00	0.00
MISC EQUIP	264.61	0.00
TOTAL	1344.92	553.78

TOTAL SITE ENERGY 1898.70 MBTU 101.3 KBTU/SQFT-YR GROSS-AREA 101.3 KBTU/SQFT-YR NET-AREA

TOTAL SOURCE ENERGY 4592.57 MBTU 245.0 KBTU/SQFT-YR GROSS-AREA 245.0 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 97.3 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

HANGAR 3637

3637ECO4.SIM 12/12/94 Page 1
FT BRAGG ENERGY STUDY SIMMONS ARMY AIRFIELD

ECO-4

DOE-2.1C 12 12 1994 10: 2: 0 PDL RUN 1

HVAC RENOVATIONS

WEATHER FILE- THY RALEIGH, NC

ORT- BEPS ESTIMATED BUILDING ENERGY PERFORMANCE

ENERGY TYPE IN SITE MBTU -	ELECTRICITY	FUEL-OIL
CATEGORY OF USE		
SPACE HEAT	147.82	3132.05
SPACE COOL	170.92	0.00
HVAC AUX	202.94	0.00
DOM HOT WTR	0.00	0.00
AUX SOLAR	0.00	0.00
LIGHTS	357.33	0.00
VERT TRANS	0.00	0.00
MISC EQUIP	264.61	0.00
TOTAL	1143.62	3132.05

TOTAL SITE ENERGY 4275.65 MBTU 228.0 KBTU/SQFT-YR GROSS-AREA 228.0 KBTU/SQFT-YR NET-AREA TOTAL SOURCE ENERGY 6566.31 MBTU 350.2 KBTU/SQFT-YR GROSS-AREA 350.2 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 97.3 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

3642.SIM

12,2 94

Page 1

FT BRAGG ENERGY STUDY HANGAR 3642

SIMMONS ARMY AIRFIELD

BASE CASE

DRI- BEPS ESTIMATED BUILDING ENERGY PERFORMANCE

DOE-2.1C 11 14/1994 13:52:44 PDL RUN 1

PRESENT ENERGY USAGE

WEATHER FILE- TMY RALEIGH, NC

ENERGY TYPE IN SITE MBTU -	ELECTRICITY	FUEL-OIL
CATEGORY OF USE		
SPACE HEAT	277.43	5031.04
SPACE COOL	223.90	0.00
HVAC AUX	79.12	0.00
DOM HOT WTR	0.00	0.00
AUX SOLAR	0.00	0.00
LIGHTS	590.91	0.00
VERT TRANS	0.00	0.00
MISC EQUIP	113.89	0.00
TOTAL	1285.25	5031.04

TOTAL SITE ENERGY 6316.26 MBTU 190.5 KBTU/SQFT-YR GROSS-AREA 190.5 KBTU/SQFT-YR NET-AREA

TOTAL SOURCE ENERGY 8890.57 MBTU 268.1 KBTU/SQFT-YR GROSS-AREA 268.1 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 35.3 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

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Page 1

FI BRAGG ENERGY STUDY HANGAR 3642

SIMMONS ARMY AIRFIELD

DOE-2.1C 11 N G BLRS & IR HEAT

DOE-2.1C 11/30/1994 15:15: 6 PDL RUN 1

WEATHER FILE- TMY RALEIGH, NC

RT- BEPS ESTIMATED BUILDING ENERGY PERFORMANCE

ENERGY TYPE IN SITE MBTU -	ELECTRICITY	NATURAL-GAS
CATEGORY OF USE		
SPACE HEAT	250.36	3475.99
SPACE COOL	223.90	0.00
HVAC AUX	84.10	0.00
DOM HOT WTR	0.00	0.00
AUX SOLAR	0.00	0.00
LIGHTS	590.91	0.00
VERT TRANS	0.00	0.00
MISC EQUIP	113.89	0.00
mort! I	1262 16	2475 00
TOTAL	1263.16	3475.99

TOTAL SITE ENERGY 4739.13 MBTU 142.9 KBTU/SQFT-YR GROSS-AREA 142.9 KBTU/SQFT-YR NET-AREA

TOTAL SOURCE ENERGY 7269.20 MBTU 219.2 KBTU/SQFT-YR GROSS-AREA 219.2 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 4.8 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

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HANGAR 3642

FT BRAGG ENERGY STUDY

SIMMONS ARMY AIRFIELD

ORT- BEPS ESTIMATED BUILDING ENERGY PERFORMANCE

DOE-2.1C 1 ELECTRIC IR HEAT DOE-2.1C 12/1 1994 15:28:32 PDL RUN 1

WEATHER FILE- TMY RALEIGH, NC

ENERGY TYPE IN SITE MBTU -	ELECTRICITY	FUEL-OIL
CATEGORY OF USE		
SPACE HEAT	1040.49	1547.21
SPACE COOL	223.90	0.00
HVAC AUX	32.46	0.00
DOM HOT WTR	0.00	0.00
AUX SOLAR	0.00	0.00
LIGHTS	590.92	0.00
VERT TRANS	0.00	0.00
MISC EQUIP	113.89	0.00
TOTAL	2001.66	1547.21

TOTAL SITE ENERGY 3548.84 MBTU 107.0 KBTU/SQFT-YR GROSS-AREA 107.0 KBTU/SQFT-YR NET-AREA TOTAL SOURCE ENERGY 7558.10 MBTU 227.9 KBTU/SQFT-YR GROSS-AREA 227.9 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 24.9 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED

3642ECO4.SIM 12/12/94 Page 1
FT BRAGG ENERGY STUDY SIMMONS ARMY AIRFIELD ECO-4

PRICEGO MADE

DOE-2.1C 1 HVAC RENOVATIONS DOE-2.1C 12/12/1994 8:46:19 PDL RUN 1

WEATHER FILE- TMY RALEIGH, NC

ORT- BEPS ESTIMATED BUILDING ENERGY PERFORMANCE

ENERGY TYPE IN SITE MBTU -	ELECTRICITY	FUEL-OIL
CATEGORY OF USE		
SPACE HEAT	180.12	5244.23
SPACE COOL	122.07	0.00
HVAC AUX	109.31	0.00
DON HOT WTR	0.00	0.00
AUX SOLAR	0.00	0.00
LIGHTS	590.92	0.00
VERT TRANS	0.00	0.00
MISC EQUIP	113.89	0.00
TOTAL	1116.31	5244.23

TOTAL SITE ENERGY 6360.52 MBTU 191.8 KBTU/SQFT-YR GROSS-AREA 191.8 KBTU/SQFT-YR NET-AREA TOTAL SOURCE ENERGY 8596.43 MBTU 259.2 KBTU/SQFT-YR GROSS-AREA 259.2 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 35.3 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

3807.SIM

12/2.94

Page 1

FT BRAGG ENERGY STUDY HANGAR 3807

SIMMONS ARMY AIRFIELD

BASE CASE

PRESENT ENERGY USAGE

DOF-2.1C 12/ 2/1994 10:50:13 PDL RUN 1

WEATHER FILE- TMY RALEIGH, NC

PORT- BEPS ESTIMATED BUILDING ENERGY PERFORMANCE

ENERGY TYPE IN SITE MBTU - ELECTRICITY FUEL-OIL CATEGORY OF USE SPACE HEAT 273.34 7961.02 SPACE COOL 0.00 0.00 HVAC AUX 556.73 0.00 DOM HOT WTR 0.00 231.98 AUX SOLAR 0.00 0.00 LIGHTS 1132.43 0.00 VERT TRANS 0.00 0.00 MISC EQUIP 178.32 0.00

TOTAL SITE ENERGY 10333.85 MBTU 197.3 KBTU/SQFT-YR GROSS-AREA 197.3 KBTU/SQFT-YR NET-AREA TOTAL SOURCE ENERGY 14621.99 MBTU 279.2 KBTU/SQFT-YR GROSS-AREA 279.2 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 78.6 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

TOTAL 2140.83 8192.99

3807EC02.SIM 12/2/94

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FT BRAGG ENERGY STUDY HANGAR 3807

SIMMONS ARMY AIRFIELD

ECO-2

PORT- BEPS ESTIMATED BUILDING ENERGY PERFORMANCE

DOF-2.1C 12/2/1994 12:53: 7 PDL RUN 1 NG BOILERS & INFRA-RED RADIANT HEAT

WEATHER FILE- TMY RALEIGH, NC

ENERGY TYPE IN SITE MBTU -	ELECTRICITY	NATURAL-GAS
CATEGORY OF USE		
SPACE HEAT	217.80	4825.14
SPACE COOL	0.00	0.00
HVAC AUX	543.14	0.00
DOM HOT WTR	4.36	81.51
AUX SOLAR	0.00	0.00
LIGHTS	1132.41	0.00
VERT TRANS	0.00	0.00
MISC EQUIP	178.32	0.00
TOTAL	2076.03	4906.65

TOTAL SITE ENERGY 6982.74 MBTU 133.3 KBTU/SQFT-YR GROSS-AREA 133.3 KBTU/SQFT-YR NET-AREA

TOTAL SOURCE ENERGY 11141.16 MBTU 212.7 KBTU/SQFT-YR GROSS-AREA 212.7 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 49.5 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED

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HANGAR 3807

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FT BRAGG ENERGY STUDY

SIMMONS ARMY AIRFIELD

ECO-3

DOF-2.1C 12/ 2/1994 14:57:36 PDL RUN 1 DOF-2.1C 1 ELECTRIC IR HEAT

WEATHER FILE- THY RALEIGH, NC

PORT- BEPS ESTIMATED BUILDING ENERGY PERFORMANCE

ENERGY TYPE IN SITE MBTU -	ELECTRICITY	FUEL-OIL
CATEGORY OF USE		
SPACE HEAT	1360.14	1313.07
SPACE COOL	0.00	0.00
HVAC AUX	452.23	0.00
DOM HOT WTR	0.00	231.98
AUX SOLAR	0.00	0.00
LIGHTS	1132.43	0.00
VERT TRANS	0.00	0.00
MISC EQUIP	178.32	0.00
TOTAL	3123.13	1545.04

TOTAL SITE ENERGY 4668.21 MBTU 89.1 KBTU/SQFT-YR GROSS-AREA 89.1 KBTU/SQFT-YR NET-AREA TOTAL SOURCE ENERGY 10923.93 MBTU 208.6 KBTU/SQFT-YR GROSS-AREA 208.6 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 81.8 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

3954.SIN FT BRAGG ENERGY STUDY

HANGAR 3954

12/2/94 Page 1

SIMMONS ARMY AIRFIELD

BASE CASE

DOE-2.1C 11/11/1994 15:14:17 PDL RUN 1

PRESENT ENERGY USAGE

WEATHER FILE- TMY RALEIGH, NC

ORT- BEPS ESTIMATED BUILDING ENERGY PERFORMANCE

ENERGY TYPE IN SITE MBTU -	ELECTRICITY	FUEL-OIL
CATEGORY OF USE		
SPACE HEAT	159.80	3599.33
SPACE COOL	187.44	0.00
HVAC AUX	80.22	0.00
DON HOT WTR	0.00	0.00
AUX SOLAR	0.00	0.00
LIGHTS	634.62	0.00
VERT TRANS	0.00	0.00
HISC EQUIP	188.68	0.00
TOTAL	1250.76	3599.33

TOTAL SITE ENERGY 4850.10 MBTU 141.1 KBTU/SQFT-YR GROSS-AREA 141.1 KBTU/SQFT-YR NET-AREA

TOTAL SOURCE ENERGY 7355.39 MBTU 214.0 KBTU/SQFT-YR GROSS-AREA 214.0 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 14.8 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

3954ECO2.SIM 12 2/94 Page 1 FT BRAGG ENERGY STUDY

HANGAR 3954

SIMMONS ARMY AIRFIELD

E00-2

PORT- BEPS ESTIMATED BUILDING ENERGY PERFORMANCE

DOF-2.1C 11 N G BLRS & IR HEAT DOE-2.1C 11 30 1994 15:48:17 PDL RUN 1

WEATHER FILE- THY RALEIGH, NC

ENERGY TYPE IN SITE MBTU -	ELECTRICITY	NATURAL-GAS
CATEGORY OF USE		
SPACE HEAT	109.31	2096.87
SPACE COOL	187.44	0.00
HVAC AUX	81.23	0.00
DOM HOT WTR	0.00	0.00
AUX SOLAR	0.00	0.00
LIGHTS	634.62	0.00
VERT TRANS	0.00	0.00
MISC EQUIP	188.68	0.00
TOTAL	1201.28	2096.87

TOTAL SITE ENERGY 3298.16 MBTU 95.9 KBTU/SQFT-YR GROSS-AREA 95.9 KBTU/SQFT-YR NET-AREA TOTAL SOURCE ENERGY 5704.33 MBTU 165.9 KBTU/SQFT-YR GROSS-AREA 165.9 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 0.0 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

3954EC03.SIN 12 2 '94

Page 1

FT BRAGG ENERGY STUDY RANGAR 3954

SIMMONS ARMY AIRFIELD

ECO-3

ORT- BEPS ESTIMATED BUILDING ENERGY PERFORMANCE

ELECTRIC IR HEAT
WEATH DOE-2.1C 12/1/1994 16: 2:10 PDL RUN 1

WEATHER FILE- TMY RALEIGH, NC

ENERGY TYPE IN SITE MBTU -	ELECTRICITY	FUEL-OIL
CATEGORY OF USE		
SPACE HEAT	591.75	528.32
SPACE COOL	187.44	0.00
HVAC AUX	39.11	0.00
DON HOT WTR	0.00	0.00
AUX SOLAR	0.00	0.00
LIGHTS	634.62	0.00
VERT TRANS	0.00	0.00
MISC EQUIP	188.68	0.00
TOTAL	1641.60	528.32

TOTAL SITE ENERGY 2169.94 MBTU 63.1 KBTU/SQFT-YR GROSS-AREA 63.1 KBTU/SQFT-YR NET-AREA TOTAL SOURCE ENERGY 5458.11 MBTU 158.8 KBTU/SQFT-YR GROSS-AREA 158.8 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 0.7 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

3962.SIM

12 2/94

Page 1

FT BRAGG ENERGY STUDY HANGAR 3962

SIMMONS ARMY AIRFIELD

BASE CASE

DOE-2.1C 11 16 1994 12:28:35 PDL RUN 1

PRESENT ENERGY USAGE

WEATHER FILE- TMY RALEIGH, NC

ORT- BEPS ESTIMATED BUILDING ENERGY PERFORMANCE

ENERGY TYPE IN SITE MBTU -	ELECTRICITY	FUEL-OIL
CATEGORY OF USE		
SPACE HEAT	238.10	4941.79
SPACE COOL	204.36	0.00
HVAC AUX	71.70	0.00
DOM HOT WTR	0.00	0.00
AUX SOLAR	0.00	0.00
LIGHTS	607.47	0.00
VERT TRANS	0.00	0.00
MISC EQUIP	109.29	0.00
TOTAL	1230.92	4941.79

TOTAL SITE ENERGY 6172.69 MBTU 186.1 KBTU/SQFT-YR GROSS-AREA 186.1 KBTU/SQFT-YR NET-AREA TOTAL SOURCE ENERGY 8638.19 MBTU 260.5 KBTU/SQFT-YR GROSS-AREA 260.5 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 16.7 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

3962ECO2.SIM 12/2/94 Page 1

FT BRAGG ENERGY STUDY HANGAR 3962

SIMMONS ARMY AIRFIELD

ECO-2

DRT- BEPS ESTIMATED BUILDING ENERGY PERFORMANCE

DOE-2.1C 11/30/1994 16: 8:23 PDL RUN 1 N G BLRS & IR HEAT

WEATHER FILE- THY RALEIGH, NO

ENERGY TYPE IN SITE MBTU -	ELECTRICITY	NATURAL-GAS
CATEGORY OF USE		
SPACE HEAT	207.40	3338.74
SPACE COOL	204.36	0.00
HVAC AUX	74.77	0.00
DOM HOT WTR	0.00	0.00
AUX SOLAR	0.00	0.00
LIGHTS	607.47	0.00
VERT TRANS	0.00	0.00
MISC EQUIP	109.29	0.00
TOTAL	1203.30	3338.74

TOTAL SITE ENERGY 4542.02 MBTU 137.0 KBTU/SQFT-YR GROSS-AREA 137.0 KBTU/SQFT-YR NET-AREA TOTAL SOURCE ENERGY 6952.20 MBTU 209.7 KBTU/SQFT-YR GROSS-AREA 209.7 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 7.2 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

3962ECO3.SIM 12 2'94 FT BRAGG ENERGY STUDY

Page 1

HANGAR 3962

SIMMONS ARMY AIRFIELD

ECO-3

ELECTRIC IR HEAT

DOE-2.1C 12/2 1994 8:20:14 PDL RUN 1

WEATHER FILE- TMY RALEIGH, NC

ORT- BEPS ESTIMATED BUILDING ENERGY PERFORMANCE

ENERGY TYPE IN SITE MBTU -	ELECTRICITY	FUEL-OIL
CATEGORY OF USE		
SPACE HEAT	887.74	1688.66
SPACE COOL	204.36	0.00
HVAC AUX	28.06	0.00
DOM HOT WTR	0.00	0.00
AUX SOLAR	0.00	0.00
LIGHTS	607.47	0.00
VERT TRANS	0.00	0.00
MISC EQUIP	109.29	0.00
TOTAL	1836.92	1688.66

TOTAL SITE ENERGY 3525.56 MBTU 106.3 KBTU/SQFT-YR GROSS-AREA TOTAL SOURCE ENERGY 7204.89 MBTU 217.3 KBTU/SQFT-YR GROSS-AREA

106.3 KBTU/SQFT-YR NET-AREA 217.3 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 7.2 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

3962ECO4.SIN 12/12/94 Page 1
FT BRAGG ENERGY STUDY SIMMONS ARMY AIRFIELD ECO-4

DOE-2.1C 12/ 8/1994 16:38: 3 PDL RUN 1 EVAC REMOVATIONS

WEATHER FILE- TMY RALEIGH, NO

DRT- BEPS ESTIMATED BUILDING ENERGY PERFORMANCE

ENERGY TYPE IN SITE MBTU -	ELECTRICITY	FUEL-OIL
CATEGORY OF USE		
SPACE HEAT	161.86	3667.50
SPACE COOL	336.20	0.00
HVAC AUX	228.34	0.00
DON HOT WTR	0.00	0.00
AUX SOLAR	0.00	0.00
LIGHTS	607.47	0.00
VERT TRANS	0.00	0.00
MISC EQUIP	109.29	0.00
TOTAL	1443.16	3667.50

TOTAL SITE ENERGY 5110.64 MBTU 154.1 KBTU/SQFT-YR GROSS-AREA 154.1 KBTU/SQFT-YR NET-AREA TOTAL SOURCE ENERGY 8001.24 MBTU 241.3 KBTU/SQFT-YR GROSS-AREA 241.3 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 16.7 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

FT BRAGG ENERGY STUDY
SIMMONS ARM
BASE CASE

4137.SIM 12 1 94 Page 1
FT RRAGG ENERGY STUDY SIMMONS ARMY AIRFIELD

DOF-2.1C 12/1/ PRESENT ENERGY USAGE

DOF-2.1C 12/1/1994 13:35:21 PDL RUN 1

WEATHER FILE- THY RALEIGH, NO

ORT- BEPS ESTIMATED BUILDING ENERGY PERFORMANCE

ENERGY TYPE IN SITE MBTU -	ELECTRICITY	FUEL-OIL
CATEGORY OF USE		
SPACE HEAT	158.57	3575.87
SPACE COOL	99.89	0.00
HVAC AUX	59.76	0.00
DOM HOT WTR	0.00	0.00
AUX SOLAR	0.00	0.00
LIGHTS	357.33	0.00
VERT TRANS	0.00	0.00
MISC EQUIP	264.61	0.00
TOTAL	940.16	3575.87

TOTAL SITE ENERGY 4516.01 MBTU 240.9 KBTU/SQFT-YR GROSS-AREA 240.9 KBTU/SQFT-YR NET-AREA TOTAL SOURCE ENERGY 6399.12 MBTU 341.3 KBTU/SQFT-YR GROSS-AREA 341.3 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 97.3 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

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FT BRAGG ENERGY STUDY HANGAR 4137

SIMMONS ARMY AIRFIELD

ECO-2

NG BOILERS & INFRA-RED RADIANT HEAT WEATHER FILE- THY RALEIGH, NO

DOE-2.1C 12/1/1994 13:57:21 PDL RUN 1

ORT- BEPS ESTIMATED BUILDING ENERGY PERFORMANCE

ENERGY TYPE IN SITE MBTU -	ELECTRICITY	NATURAL-GAS
CATEGORY OF USE		
SPACE HEAT	114.89	1955.24
SPACE COOL	68.81	0.00
HVAC AUX	44.68	0.00
DOM HOT WTR	0.00	0.00
AUX SOLAR	0.00	0.00
LIGHTS	357.33	0.00
VERT TRANS	0.00	0.00
MISC EQUIP	264.61	0.00
TOTAL	850.32	1955.24

TOTAL SITE ENERGY 2908.28 MBTU 155.1 KBTU/SQFT-YR GROSS-AREA 155.1 KBTU/SQFT-YR NET-AREA TOTAL SOURCE ENERGY 4817.23 MBTU 256.9 KBTU/SQFT-YR GROSS-AREA 256.9 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 97.2 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

4137ECO3.SIM 12 2/94 Page 1

FT BRAGG ENERGY STUDY BANGAR 4137

SIMMONS ARMY AIRFIELD

ECO-3

ELECTRIC IR HEAT

DOE-2.1C 12/2/1994 13:18:46 PDL RUN 1

WEATHER FILE- TMY RALEIGH, NC

ORT- BEPS ESTIMATED BUILDING ENERGY PERFORMANCE

ENERGY TYPE IN SITE MBTU -	ELECTRICITY	FUEL-OIL
CATEGORY OF USE		
SPACE HEAT	639.26	777.59
SPACE COOL	99.89	0.00
HVAC AUX	14.73	0.00
DOM HOT WTR	0.00	0.00
AUX SOLAR	0.00	0.00
LIGHTS	357.33	0.00
VERT TRANS	0.00	0.00
MISC EQUIP	264.61	0.00
TOTAL	1375.82	777.59

TOTAL SITE ENERGY 2304.97 MBTU 122.9 KBTU/SQFT-YR GROSS-AREA 122.9 KBTU/SQFT-YR NET-AREA TOTAL SOURCE ENERGY 5364.33 MBTU 286.1 KBTU/SQFT-YR GROSS-AREA 286.1 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 97.2 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

ORT- BEPS ESTIMATED BUILDING ENERGY PERFORMANCE

4137ECO4.SIM 12/12/94 Page 1
FT BRAGG ENERGY STUDY SIMMONS ARMY AIRFIELD
HANGAR 4137 ECO-4

FNFDCV TVDF

DOE-2.1C 12/12/1994 10:27:26 PDL RUN 1

HVAC RENOVATIONS

WEATHER FILE- TMY RALEIGH, NO

IN SITE MBTU -	ELECTRICITY	FUEL-OIL
CATEGORY OF USE		
SPACE HEAT	147.34	3121.67
SPACE COOL	173.56	0.00
HVAC AUX	205.10	0.00
DOM HOT WTR	0.00	0.00
AUX SOLAR	0.00	0.00
LIGHTS	357.33	0.00
VERT TRANS	0.00	0.00

MISC EQUIP 264.61

0.00

TOTAL SITE ENERGY 4269.59 MBTU 227.7 KBTU/SQFT-YR GROSS-AREA 227.7 KBTU/SQFT-YR NET-AREA TOTAL SOURCE ENERGY 6568.87 MBTU 350.4 KBTU/SQFT-YR GROSS-AREA 350.4 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 97.3 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

TOTAL 1147.94 3121.67

4242.SIM FT BRAGG ENERGY STUDY

HANGAR 4242

12 1 94 Page 1

ORT- BEPS ESTIMATED BUILDING ENERGY PERFORMANCE

SIMMONS ARMY AIRFIELD

BASE CASE

DOE-2.1C 12/1/1994 14:23: 8 PDL RUN 1

PRESENT ENERGY USAGE

WEATHER FILE- TMY RALEIGH, NC

ENERGY TYPE IN SITE MBTU -	ELECTRICITY	FUEL-OIL
CATEGORY OF USE		
SPACE HEAT	120.75	2326.89
SPACE COOL	35.73	0.00
HVAC AUX	39.18	0.00
DON HOT WTR	0.00	0.00
AUX SOLAR	0.00	0.00
LIGHTS	218.67	0.00
VERT TRANS	0.00	0.00
MISC EQUIP	103.54	0.00
TOTAL	517.87	2326.89

TOTAL SITE ENERGY 2844.77 MBTU 257.0 KBTU/SQFT-YR GROSS-AREA 257.0 KBTU/SQFT-YR NET-AREA TOTAL SOURCE ENERGY 3882.07 MBTU 350.7 KBTU/SQFT-YR GROSS-AREA 350.7 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM SOME OUTSIDE OF THROTTLING RANGE = 37.1 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

4242ECO2.SIN 12/1/94

BANGAR 4242

Page 1

FT BRAGG ENERGY STUDY

SIMMONS ARMY AIRFIELD

ECO-2

DOE-2.1C 12/1/1994 14:35: NG BOILERS & INFRA-RED RADIANT HEAT WEATHER FILE- TMY RALEIGH, NC

DOE-2.1C 12/1/1994 14:35:25 PDL RUN 1

DRT- BEPS ESTIMATED BUILDING ENERGY PERFORMANCE

ENERGY TYPE IN SITE MBTU -	ELECTRICITY	NATURAL-GAS
CATEGORY OF USE		
SPACE HEAT	71.60	1269.81
SPACE COOL	35.73	0.00
HVAC AUX	29.41	0.00
DOM HOT WTR	0.00	0.00
AUX SOLAR	0.00	0.00
LIGHTS	218.67	0.00
VERT TRANS	0.00	0.00
MISC EQUIP	103.54	0.00
TOTAL	458.95	1269.81

TOTAL SITE ENERGY 1728.77 MBTU 156.2 KBTU/SQFT-YR GROSS-AREA 156.2 KBTU/SQFT-YR NET-AREA TOTAL SOURCE ENERGY 2648.06 MBTU 239.3 KBTU/SQFT-YR GROSS-AREA 239.3 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 34.8 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

4242ECO3.SIN 12/2/94 Page 1 FT BRAGG ENERGY STUDY

SIMMONS ARMY AIRFIELD

HANGAR 4242

ECO-3

DOF-2.1C 12/ 2/1994 14: 3:28 PDL RUN 1

ELECTRIC IR HEAT

WEATHER FILE- TMY RALEIGH, NO

ORT- BEPS ESTIMATED BUILDING ENERGY PERFORMANCE

ENERGY TYPE IN SITE MBTU -	ELECTRICITY	FUEL-OIL
CATEGORY OF USE		
SPACE HEAT	66.85	1283.71
SPACE COOL	35.73	0.00
HVAC AUX	27.47	0.00
DOM HOT WTR	0.00	0.00
AUX SOLAR	0.00	0.00
LIGHTS	218.67	0.00
VERT TRANS	0.00	0.00
MISC EQUIP	103.54	0.00
TOTAL	452.26	1283.71

TOTAL SITE ENERGY 1735.97 MBTU 156.8 KBTU/SQFT-YR GROSS-AREA 156.8 KBTU/SQFT-YR NET-AREA TOTAL SOURCE ENERGY 2641.85 MBTU 238.7 KBTU/SQFT-YR GROSS-AREA 238.7 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 34.8 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

4242ECO4.SIM 12/12/94 Page 1
FT BRAGG ENERGY STUDY SIMMONS ARMY AIRFIELD ECO-4

DOE-2.1C 12 12 1994 9:57:33 PDL RUN 1 HVAC RENOVATIONS

WEATHER FILE- TMY RALEIGH, NC

ORT- BEPS ESTINATED BUILDING ENERGY PERFORMANCE

ENERGY TYPE IN SITE MBTU -	ELECTRICITY	FUEL-OIL
CATEGORY OF USE		
SPACE HEAT	102.67	1983.05
SPACE COOL	37.53	0.00
HVAC AUX	59.25	0.00
DON HOT WTR	0.00	0.00
AUX SOLAR	0.00	0.00
LIGHTS	218.66	0.00
VERT TRANS	0.00	0.00
MISC EQUIP	103.54	0.00
TOTAL	521.66	1983.05

TOTAL SITE ENERGY 2504.72 MBTU 226.3 KBTU/SQFT-YR GROSS-AREA 226.3 KBTU/SQFT-YR NET-AREA TOTAL SOURCE ENERGY 3549.62 MBTU 320.7 KBTU/SQFT-YR GROSS-AREA 320.7 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 43.9 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

NOTE ELECTRICITY AND/OR FUEL USED TO GENERATE ELECTRICITY IS APPORTIONED BASED ON THE YEARLY DEMAND. ALL OTHER ENERGY TYPES ARE APPORTIONED HOURLY.

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7937.SIM

12 2 94 Page 1

3FT BRAGG ENERGY STUDY HANGAR 7937

SIMMONS ARMY AIRFIELD

BASE CASE

PRESENT ENERGY USAGE

DOE-2.1C 12/ 1/1994 8:32:15 PDL RUN 1

WEATHER FILE- TMY RALEIGH, NC

ORT- BEPS ESTIMATED BUILDING ENERGY PERFORMANCE

ENERGY TYPE IN SITE MBTU -	ELECTRICITY	FUEL-OIL
CATEGORY OF USE		
SPACE HEAT	320.25	12014.68
SPACE COOL	335.21	0.00
HVAC AUX	603.57	0.00
DOM BOT WTR	0.00	231.98
AUX SOLAR	0.00	0.00
LIGHTS	1254.90	0.00
VERT TRANS	0.00	0.00
MISC EQUIP	190.97	0.00
mom) t	2704 00	
TOTAL	2704.89	12246.66

TOTAL SITE ENERGY 14951.49 MBTU 222.0 KBTU/SQFT-YR GROSS-AREA 222.0 KBTU/SQFT-YR NET-AREA TOTAL SOURCE ENERGY 20369.28 MBTU 302.4 KBTU/SQFT-YR GROSS-AREA 302.4 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 36.9 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 1.9

7937EC02.SIN 12/2/94

HANGAR 7937

FT BRAGG ENERGY STUDY

Page 1

SIMMONS ARMY AIRFIELD

ECO-2

DOF-2.1C 12/1/1994 9:24:32 PDL RUN 1

N G BLRS & IR HEAT

WEATHER FILE- TMY RALEIGH, NC

RT- BEPS ESTIMATED BUILDING ENERGY PERFORMANCE

ENERGY TYPE IN SITE MBTU -	ELECTRICITY	NATURAL-GAS
CATEGORY OF USE		
SPACE HEAT	304.39	7739.89
SPACE COOL	335.21	0.00
HVAC AUX	515.71	0.00
DOM HOT WTR	0.00	99.88
AUX SOLAR	0.00	0.00
LIGHTS	1254.87	0.00
VERT TRANS	0.00	0.00
MISC EQUIP	190.96	0.00
TOTAL	2601.15	7839.77

TOTAL SITE ENERGY 10440.90 MBTU 155.0 KBTU/SQFT-YR GROSS-AREA 155.0 KBTU/SQFT-YR NET-AREA TOTAL SOURCE ENERGY 15650.97 MBTU 232.4 KBTU/SQFT-YR GROSS-AREA 232.4 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 12.4 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.3

7937EC03.SIN 12/2/94 FT BRAGG ENERGY STUDY

SIMMONS ARMY AIRFIELD

BANGAR 7937

ECO-3

Page 1

DOE-2.1C 12/2/1994 9:30:38 PDL RUN 1

ELECTRIC IR HEAT

ORT- BEPS ESTIMATED BUILDING ENERGY PERFORMANCE

WEATHER FILE- TMY RALEIGH, NC

ENERGY TYPE IN SITE MBTU -	ELECTRICITY	FUEL-OIL
CATEGORY OF USE		
SPACE HEAT	2075.98	3088.13
SPACE COOL	335.21	0.00
HVAC AUX	366.17	0.00
DOM HOT WTR	0.00	231.98
AUX SOLAR	0.00	0.00
LIGRTS	1254.89	0.00
VERT TRANS	0.00	0.00
MISC EQUIP	190.97	0.00
TOTAL	4223.22	3320.11

TOTAL SITE ENERGY 7543.29 MBTU 112.0 KBTU/SQFT-YR GROSS-AREA 112.0 KBTU/SQFT-YR NET-AREA TOTAL SOURCE ENERGY 16002.34 MBTU 237.6 KBTU/SQFT-YR GROSS-AREA 237.6 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 34.6 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

8944.SIN

HANGAR 8944

12,2/94

Page 1

FT BRAGG ENERGY STUDY

SIMMONS ARMY AIRFIELD

BASE CASE

DOE-2.1C 11/28 PRESENT ENERGY USAGE

DOE-2.1C 11 28 1994 15:56: 8 PDL RUN 1

WEATHER FILE- THY RALEIGH, NC

PORT- BEPS ESTIMATED BUILDING ENERGY PERFORMANCE

ENERGY TYPE IN SITE MBTU -	ELECTRICITY	FUEL-OIL
CATEGORY OF USE		
SPACE HEAT	314.47	10532.26
SPACE COOL	100.23	0.00
HVAC AUX	404.10	0.00
DOM HOT WTR	0.00	210.41
AUX SOLAR	0.00	0.00
LIGHTS	985.70	0.00
VERT TRANS	0.00	0.00
MISC EQUIP	184.07	0.00
TOTAL	1988.58	10742.67

TOTAL SOURCE ENERGY 16714.19 MBTU 300.3 KBTU/SQFT-YR GROSS-AREA 300.3 KBTU/SQFT-YR NET-AREA

TOTAL SITE ENERGY 12731.19 MBTU 228.8 KBTU/SQFT-YR GROSS-AREA 228.8 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 13.1 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED

8944ECO2.SIM

HANGAR 8944

12, 2, 94

Page 1

FT BRAGG ENERGY STUDY

SIMMONS ARMY AIRFIELD

ORT- BEPS ESTIMATED BUILDING ENERGY PERFORMANCE

DOE-2.1C 12/1/1994 8:49:11 PDL RUN 1

N G BLRS & IR HEAT

WEATHER FILE- TMY RALEIGH, NC

ENERGY TYPE IN SITE MBTU -	ELECTRICITY	NATURAL-GAS
CATEGORY OF USE		
SPACE HEAT	239.01	5457.17
SPACE COOL	100.23	0.00
HVAC AUX	302.22	0.00
DON HOT WTR	0.00	80.73
AUX SOLAR	0.00	0.00
LIGHTS	985.70	0.00
VERT TRANS	0.00	0.00
MISC EQUIP	184.07	0.00
TOTAL	1811.24	5537.90

TOTAL SITE ENERGY 7349.07 MBTU 132.1 KBTU/SQFT-YR GROSS-AREA 132.1 KBTU/SQFT-YR NET-AREA

TOTAL SOURCE ENERGY 10976.85 MBTU 197.2 KBTU/SQFT-YR GROSS-AREA 197.2 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 1.0 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.1

8944ECO3.SIN 12/2/94 Page 1

HANGAR 8944

FT BRAGG ENERGY STUDY

SIMMONS ARMY AIRFIELD

ORT- BEPS ESTINATED BUILDING ENERGY PERFORMANCE

DOF-2.1C 12/2/1994 9:48:24 PDL RUN 1 ELECTRIC IR HEAT

WEATHER FILE- TMY RALEIGH, NC

ENERGY TYPE IN SITE MBTU -	ELECTRICITY	FUEL-OIL
CATEGORY OF USE		
SPACE HEAT	1657.34	1105.78
SPACE COOL	100.23	0.00
HVAC AUX	174.79	0.00
DON HOT WTR	0.00	210.41
AUX SOLAR	0.00	0.00
LIGHTS	985.69	0.00
VERT TRANS	0.00	0.00
MISC EQUIP	184.07	0.00
TOTAL	3102.11	1316.20
101110	2102.11	7710.50

TOTAL SITE ENERGY 4418.27 HBTU 79.4 KBTU/SQFT-YR GROSS-AREA 79.4 KBTU/SQFT-YR NET-AREA TOTAL SOURCE ENERGY 10631.75 MBTU 191.0 KBTU/SQFT-YR GROSS-AREA 191.0 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 2.0 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED

9647.SIN

12/2,94

RT- BEPS ESTIMATED BUILDING ENERGY PERFORMANCE

Page 1

FT BRAGG ENERGY STUDY HANGAR 9647

SIMMONS ARMY AIRFIELD

BASE CASE

PRESENT ENERGY USAGE

DOF-2.1C 12, 2 1994 11:54:52 PDL RUN 1

WEATHER FILE- TMY RALEIGH, NC

ENERGY TYPE IN SITE MBTU -	ELECTRICITY	FUEL-OIL
CATEGORY OF USE		
SPACE HEAT	273.52	7995.96
SPACE COOL	225.12	0.00
HVAC AUX	573.72	0.00
DOM HOT WTR	0.00	231.98
AUX SOLAR	0.00	0.00
LIGHTS	1132.44	0.00
VERT TRANS	0.00	0.00
MISC EQUIP	178.32	0.00

TOTAL SITE ENERGY 10611.09 MBTU 202.6 KBTU/SQFT-YR GROSS-AREA 202.6 KBTU/SQFT-YR NET-AREA TOTAL SOURCE ENERGY 15384.57 MBTU 293.7 KBTU/SQFT-YR GROSS-AREA 293.7 KBTU/SQFT-YR NET-AREA 293.7 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 54.3 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

TOTAL 2383.12 8227.94

9647EC02.SIN 12/2/94

HANGAR 9647

Page 1

FT BRAGG ENERGY STUDY

SIMMONS ARMY AIRFIELD

DOF-2.1C 12/2'1994 13:17: NG BOILERS & INFRA-RED RADIANT HEAT

DOF-2.1C 12/ 2/1994 13:17:40 PDL RUN 1

WEATHER FILE- TMY RALEIGH, NC

PORT- BEPS ESTIMATED BUILDING ENERGY PERFORMANCE

ENERGY TYPE IN SITE MBTU -	ELECTRICITY	NATURAL-GAS
CATEGORY OF USE		
SPACE HEAT	219.50	4845.76
SPACE COOL	225.12	0.00
HVAC AUX	559.05	0.00
DOM HOT WTR	4.35	81.47
AUX SOLAR	0.00	0.00
LIGHTS	1132.43	0.00
VERT TRANS	0.00	0.00
MISC EQUIP	178.32	0.00
TOTAL	2318.77	4927.23

TOTAL SITE ENERGY 7246.07 MBTU 138.3 KBTU/SQFT-YR GROSS-AREA 138.3 KBTU/SQFT-YR NET-AREA

TOTAL SOURCE ENERGY 11890.72 MBTU 227.0 KBTU/SQFT-YR GROSS-AREA 227.0 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 49.5 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED

9647EC03.SIM 12 2 94 Page 1

FT BRAGG ENERGY STUDY HANGAR 9647

SIMMONS ARMY AIRFIELD

ORT- BEPS ESTIMATED BUILDING ENERGY PERFORMANCE

DOE-2.1C 12/2 1994 14:50:57 PDL RUN 1

ELECTRIC IR HEAT

WEATHER FILE- TMY RALEIGH, NC

ENERGY TYPE IN SITE MBTU -	ELECTRICITY	FUEL-OIL
CATEGORY OF USE		
SPACE HEAT	1399.91	1555.23
SPACE COOL	225.12	0.00
HVAC AUX	470.27	0.00
DOM HOT WTR	0.00	231.98
AUX SOLAR	0.00	0.00
LIGHTS	1132.45	0.00
VERT TRANS	0.00	0.00
MISC EQUIP	178.33	0.00
TOTAL	3406.07	1787.20

TOTAL SITE ENERGY 5193.30 MBTU 99.1 KBTU/SQFT-YR GROSS-AREA 99.1 KBTU/SQFT-YR NET-AREA

TOTAL SOURCE ENERGY 12015.74 MBTU 229.4 KBTU/SQFT-YR GROSS-AREA 229.4 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 49.5 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

8 ECO - 2 LIFE CYCLE COST ANALYSIS

LIMITED ENERGY STUDY OF HANGAR FACILITIES AT SIMMONS ARMY AIRFIELD, FT. BRAGG, NC

This section contains the life-cycle cost analyses and construction cost estimates for ECO-2: Install Natural Gas Boiler and Infrared Heaters. The analyses and estimates are sorted by building number.

LCCA ECO-2A - ALL BUILDINGS 8-2
LCCA ECO-2B - ALL BUILDINGS
COST ESTIMATE FOR NATURAL GAS LINE EXTENSION 8-4
LCCA AND COST ESTIMATE: (sorted by building)
2936
3007
3262
3637
3642
3807
3954
3962
4137
4242
7937
8944
9647

LCCA ECO-2A

All Buildings

LIFE CYCLE COST ANALYSIS SUMMARY

ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP)

INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3

PROJECT NO. & TITLE: 94013.04 LES: ECO2A - TOTAL FOR ALL BUILDINGS FISCAL YEAR 95 DISCRETE PORTION NAME: ECO ANALYSIS DATE: 12-13-94 ECONOMIC LIFE 20 YEARS PREPARED BY: G.B. LOFLIN 1. INVESTMENT A. CONSTRUCTION COST \$ 1599836. \$ \$ \$ 79992. \$ 79992. B. SIOH C. DESIGN COST D. TOTAL COST (1A+1B+1C) \$ 1759820. E. SALVAGE VALUE OF EXISTING EQUIPMENT \$ 0. 0. E. SALVAGE VALUE OF EXISTING EQUIPMENT \$
F. PUBLIC UTILITY COMPANY REBATE \$ G. TOTAL INVESTMENT (1D - 1E - 1F) 1759820. 2. ENERGY SAVINGS (+) / COST (-) DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1994 UNIT COST SAVINGS ANNUAL \$ DISCOUNT DISCOUNTED FUEL \$/ MWH(1) MWH/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5) 142450. 9771453. 0. -4223768. 0. 0. \$ 0. 10791. \$ 308313. 0. \$ 5690136. N. TOTAL 3. NON ENERGY SAVINGS(+) / COST(-) \$ A. ANNUAL RECURRING (+/-) 32761. (1) DISCOUNT FACTOR (TABLE A) 14.88 (2) DISCOUNTED SAVING/COST (3A X 3A1) \$ 487484. B. NON RECURRING SAVINGS(+) / COSTS(-) SAVINGS(+) YR DISCNT COST(-) OC FACTR DISCOUNTED COST(-) SAVINGS(+)/ COST(-)(4) (1) (2) (3) 0. d. TOTAL 0. C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)\$ 487484. 4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))\$ 341074. 5. SIMPLE PAYBACK PERIOD (1G/4) 5.16 YEARS \$ 6177619. 6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) 7. SAVINGS TO INVESTMENT RATIO (SIR) = (6 / 1G) = (IF < 1 PROJECT DOES NOT QUALIFY) 3.51 9.67 % 8. ADJUSTED INTERNAL RATE OF RETURN (AIRR):

LCCA ECO-2B

All Buildings

PROJECT NO. & TITLE: 94013.04 ECO2B-TOTAL (ALL BUILDINGS) FISCAL YEAR 95 DISCRETE PORTION NAME: ECO2B-TOT ANALYSIS DATE: 04-21-95 ECONOMIC LIFE 20 YEARS PREPARED BY: LOFLIN 1. INVESTMENT A. CONSTRUCTION COST 2751666. 137583. B. SIOH C. DESIGN COST \$ 137583.
D. TOTAL COST (1A+1B+1C) \$ 3026832. C. DESIGN COST 137583. E. SALVAGE VALUE OF EXISTING EQUIPMENT \$ 0. F. PUBLIC UTILITY COMPANY REBATE 0. 3026832. G. TOTAL INVESTMENT (1D - 1E - 1F) 2. ENERGY SAVINGS (+) / COST (-) DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1994 UNIT COST SAVINGS ANNUAL \$ DISCOUNT DISCOUNTED \$/MWH(1) MWH/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5) FUEL A. ELECT \$ 34.95 270. \$ 9437.
B. DIST \$ 19.18 27435. \$ 526203.
C. RESID \$.00 0. \$ 0.
D. NAT G \$ 13.44 -16914. \$ -227324.
E. COAL \$.00 0. \$ 0.
F. PPG \$.00 0. \$ 0.
M. DEMAND SAVINGS \$ 0.
N. TOTAL 10791. \$ 308316. 15.08 142302. 18.57 9771595. 21.02 0. 18.58 \$ -4223683. 16.83 0. 17.38 0. 0. 14.88 0. 5690214. 3. NON ENERGY SAVINGS(+) / COST(-) 32761. A. ANNUAL RECURRING (+/-) (1) DISCOUNT FACTOR (TABLE A) 14.88 (2) DISCOUNTED SAVING/COST (3A X 3A1) \$ 487484. B. NON RECURRING SAVINGS (+) / COSTS (-) DISCOUNTED SAVINGS(+) YR DISCNT FACTR TTEM COST(-) OC SAVINGS(+)/ (2) (3) COST(-)(4)(1) 0. d. TOTAL 0. C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)\$ 487484. 4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))\$ 341077. 5. SIMPLE PAYBACK PERIOD (1G/4) 8.87 YEARS 6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) \$ 6177698. 7. SAVINGS TO INVESTMENT RATIO (SIR) = (6 / 1G) =2.04 (IF < 1 PROJECT DOES NOT QUALIFY) 6.74 % 8. ADJUSTED INTERNAL RATE OF RETURN (AIRR):

LIFE CYCLE COST ANALYSIS SUMMARY

ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP)

LCCID FY95 (92)

INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3

COST ESTIMATE for Natural Gas Line Extension

_______ Date: 04-Apr-95 Estimate: SIMMONS AAF Description: COST ESTIMATE (100% OF REQ'D MAIN - 6" & 4" STEEL) Project: LIMITED EEAP(HGR) Bid Date: FORT BRAGG, N.C. Job #: 94013.04 Location: Sq. footage: MAIN GAS LINE City indx:Raleigh, NC Description Line # _____ Matl Labor Equipment Sub ______ 0205541750 PAVEMENT REMOVAL, BITUMINOUS, 4" TO 6" THICK 560.00 S.Y. 2.50 0.00 1.73 0.00 4.23 Unit values 0.10 \$967 \$0 Totals 53.20 \$0 \$1,401 \$2,368 TAMPING TRENCH B'FILL, VIBRATING PLATE, ADD 0222541900 2550.00 C.Y. 0.00 0.55 0.00 1.99 Unit values 0.09 1.44 Totals 226.95 \$0 \$3,667 \$1,411 \$0 \$5,078 0222582800 TRENCH EXCVTNG 40HP CHNTRNCHR&BKFL 12"W24"D 23000.00 L.F. 0.20 0.00 0.20 0.00 0.39 Unit values 0.01 \$0 \$9,004 Totals 230.00 \$0 \$4,502 \$4,502 0222700500 HORZ BORNG >100' RRWK .5"WALL 24"DIA CASING 600.00 L.F. 42.93 165.09 125.10 0.00 333.12 9.14 Unit values \$25,755 \$75,058 \$0 \$199,869 Totals 5485.80 \$99,056 ASPHALTIC CONCRETE PAVEMENT, PAVING, BINDER 0251040200 COURSE, 4" THICK 560.00 S.Y. 0.33 0.02 5.30 0.37 0.00 6.01 Unit values \$186 \$0 Totals 11.76 \$2,969 \$210 \$3,365 0251040380 ASPHALTIC CONCRETE PAVEMENT, PAVING, WEARING COURSE, 2" THICK 560.00 S.Y. 0.02 0.27 0.25 Unit values 2.96 0.00 3.48 Totals 8.40 \$1,657 \$152 \$138 \$0 \$1,947 BEDDING, FOR PIPE IN TRENCH SAND, DEAD OR 0260120200 650.00 C.Y. BANK 2.79 0.00 7.71 Unit values 0.16 3.79 1.13 Totals 104.00 \$2,462 \$1,814 \$736 \$0 \$5,012 0260120500 BEDDING, PLACING IN TRENCH 650.00 C.Y. 0.55 1.99 Unit values 0.09 0.00 1.44 0.00 \$0 \$935 \$360 \$0 \$1,295 Totals 57.85 CUT IN VALVES, W/DUCK TIP GASKET, 4" DIAMETER 0266907800

2.00 Ea.

MeansData	for	Lotus	
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Unit values Totals	1.56 3.11	404.00 \$808	29.36 \$59	4.89 \$10	0.00 \$0	
0266907820	CUT IN V	ALVES, W/DUC	CK TIP GASE	KET, 6" DI	AMETER	Ea.
Unit values Totals	2.33 2.33	530.25 \$530	43.83 \$44	7.36 \$7	0.00	
0268520700 Unit values	END, TAR (ICE&DISTRIB COAT&WRAP 4' 9.39 \$126,806	DIAM 3.71	1.62		14.72
Totals 0268520800	GAS SERV	ICE&DISTRIB	PIPING, SCH	H40 STEEL	PLAIN	, ,
Unit values Totals	0.27	COAT&WRAP 6' 17.27 \$172,710	5.28	2.29		24.84 \$248,364

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Line #	Description				
	Manhours Mat				
=========			=======	=======	
U02 SITEWORK	11392 \$333,	697 \$214,258	\$128,529	\$0	\$676,484
	PIPE STEEL SCH 4" DIAM			1350 00	Ea
Unit values Totals	1.60 0 2160.00	.00 24.81 \$0 \$33,487	3.09 \$4,165	0.00	27.89 \$37,652
1517019330	PIPE STEEL SCH 6" DIAM	40 WELD ONE	JOINT LABOR	ONLY	E a
Unit values Totals	6" DIAM 2.00 0 1900.00	.00 30.86 \$0 \$29,312	3.87 \$3,678	0.00	34.73 \$32,990
1517203130	PIPE LONG RADI	US WELD ELBOW	90< 4"DIAM	10.00	P a
Unit values Totals	3.20 17 32.00 \$.13 49.31 171 \$493	6.20 \$62	0.00	72.64 \$726
1517203140	PIPE LONG RADI	US WELD ELBOW	90< 6"DIAM	10.00	Fo
Unit values Totals	4.80 40 48.00 \$.96 76.84 410 \$768	6.17 \$62	10.00 0.00 \$0	123.97 \$1,240
1517203290	PIPE WELD ELBO	W 45< 4"DIAM	LONG		_
Unit values Totals	3.20 14 19.20	.69 49.31 \$88 \$296	6.20 \$37	6.00 0.00 \$0	70.19 \$421
1517203300	PIPE WELD ELBO	W 45< 6"DIAM	LONG	4 00	_
Unit values Totals	4.80 31 19.20 \$.47 76.84 126 \$307	6.17 \$25	4.00 0.00 \$0	114.47
1517203440	PIPE BLACK STE	EL WELD TEE 4	"DIAM		
Unit values Totals	5.33 30 21.33 \$.97 82.28 124 \$329		4.00 0.00 \$0	Ea. 123.56 \$494
1517203450	PIPE BLACK STE	EL WELD TEE 6	"DIAM		
Unit values Totals		.94 127.66 114 \$255		2.00 0.00 \$0	194.91 \$390
1517203496	REDUCER, ECCEN	TRIC, BUTT WE	LD 6"DIAM	2 22	П-
Unit values Totals		.47 76.84 \$97 \$231		3.00 0.00 \$0	115.47
1562600142	GAS APPLIANCE : TYPE 4" PIPE S		UBLE DIAPHRA	AGM 3.00	Ea.

05-Apr-95			Data for I	otus		Page 4
Unit values Totals	2.00	1448.55 \$4,346	30.86 \$93	0.00 \$0	0.00 \$0	1479.41 \$4,439

Line #	Description						
	Manhours	Matl	Labor	Equipment	Sub	Total	
==========	=======		=======	========		=========	
U15 MECHANICA	A 4237	\$5,476	\$65,571	\$8,110	\$0	\$79,157	
ESTIMATE TOTA	A 15629	\$339,173	\$279,829	\$136,639	\$0	\$755,641	
SALES TAX MATL MARKUP LABOR MARKUP EQUIPT MARKU		\$23,742 \$37,309	\$97,940	\$6,832			
SUB MARKUP	5.00%				\$0		
TOTAL BEFORE CONTINGENCY BOND PROFIT	CONTINGE 10.00% 5.00% 10.00%	\$400,224	\$377,769	\$143,471	\$0	\$921,464 \$92,146 \$46,073 \$92,146	
JOB TOTAL						\$1,151,830	

Estimate: SIMMONS AAF Date: 04-Apr-95
Description: COST ESTIMATE (100% OF REQ'D MAIN - 6" & 4" STEEL)
Project: LIMITED EEAP(HGR) Bid Date:
Location: FORT BRAGG, N.C. Job #: 94013.04 Sq. footage: MAIN GAS LINE City indx: Raleigh, NC

_======================================		======= SUMMARY	=======	========	=======	=======================================
	Manhours	Matl	Labor	Equipment	Sub	Total
U02 SITEWORK U15 MECHANIC		\$333,697 \$5,476	\$214,258 \$65,571	\$128,529 \$8,110	\$0 \$0	\$676,484 \$79,157
TOTAL	15629	\$339,173	\$279,829	\$136,639	\$0	\$755,641
SALES TAX MATL MARKUP LABOR MARKUP EQUIPT MARKU	7.00% 11.00% 35.00% P 5.00%	\$23,742 \$37,309	\$97,940	\$6,832		
SUB MARKUP	5.00%			Ų 0 7 0 3 <u>2</u>	\$0	
TOTAL BEFORE CONTINGENCY BOND PROFIT	CONTINGE 10.00% 5.00% 10.00%	\$400,224	\$377,769	\$143,471	\$0	\$921,464 \$92,146 \$46,073 \$92,146
JOB TOTAL						\$1,151,830

LCCA & COST ESTIMATE (sorted by building)

LIFE CYCLE COST ANALYSIS SUMMARY

ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP)

INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3

PROJECT NO. & TITLE: 94013.04 LES: ECO2 - NAT GAS INFRARED HEAT

FISCAL YEAR 95 DISCRETE PORTION NAME: ECO

ANALYSIS DATE: 12-12-94 ECONOMIC LIPE 20 WILLIAM PRODUCT TO BE A CONOMIC TO ANALYSIS DATE: 12-12-94 ECONOMIC LIFE 20 YEARS PREPARED BY: G.B. LOFLIN 1. INVESTMENT A. CONSTRUCTION COST \$ 169852. B. SIOH \$ 8493. C. DESIGN COST \$ 8493. D. TOTAL COST (1A+1B+1C) \$ 186838. E. SALVAGE VALUE OF EXISTING EQUIPMENT \$ 0. 0. E. SALVAGE VALUE OF EXISTING EQUIPMENT \$
F. PUBLIC UTILITY COMPANY REBATE \$ 186838. G. TOTAL INVESTMENT (1D - 1E - 1F) 2. ENERGY SAVINGS (+) / COST (-) DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1994 UNIT COST SAVINGS ANNUAL \$ DISCOUNT DISCOUNTED s/ MWH(1) MWH/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5) 20244. 742335. 0. \$ -274137. 0. 0. Ο. 488441. 3. NON ENERGY SAVINGS(+) / COST(-) \$ 2374. A. ANNUAL RECURRING (+/-) (1) DISCOUNT FACTOR (TABLE A) 14.88 \$ 35319. (2) DISCOUNTED SAVING/COST (3A X 3A1) B. NON RECURRING SAVINGS(+) / COSTS(-) SAVINGS(+) YR DISCNT DISCOUNTED
COST(-) OC FACTR SAVINGS(+),
(1) (2) (3) COST(-)(4) SAVINGS(+)/ ITEM (2) d. TOTAL 0. C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)\$ 35319. 4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))\$ 6.46 YEARS 5. SIMPLE PAYBACK PERIOD (1G/4) 6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) \$ 523760. 7. SAVINGS TO INVESTMENT RATIO (SIR) = (6 / 1G) =(IF < 1 PROJECT DOES NOT QUALIFY) 8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): 8.45 %

LIFE CYCLE COST ANALYSIS SUMMARY

ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP)

INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3 PROJECT NO. & TITLE: 94013.04 LES: ECO2 - NAT GAS INFRARED HEAT FISCAL YEAR 95 DISCRETE PORTION NAME: ECO ANALYSIS DATE: 12-12-94 ECONOMIC LIFE 20 YEARS PREPARED BY: G.B. LOFLIN 1. INVESTMENT A. CONSTRUCTION COST \$ 200987. B. SIOH \$ 10049. C. DESIGN COST \$ 10049. D. TOTAL COST (1A+1B+1C) \$ 221085. E. SALVAGE VALUE OF EXISTING EQUIPMENT \$
F. PUBLIC UTILITY COMPANY REBATE \$ 0. 0. 221085. G. TOTAL INVESTMENT (1D - 1E - 1F) 2. ENERGY SAVINGS (+) / COST (-) DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1994 UNIT COST SAVINGS ANNUAL \$ DISCOUNT DISCOUNTED \$/MWH(1) MWH/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5) FUEL 20244. 742335. 0. -274137.0. 0. 0. 488441. 3. NON ENERGY SAVINGS(+) / COST(-) \$ A. ANNUAL RECURRING (+/-) 2374. (1) DISCOUNT FACTOR (TABLE A) 14.88 (2) DISCOUNTED SAVING/COST (3A X 3A1) \$ 35319. B. NON RECURRING SAVINGS(+) / COSTS(-) SAVINGS(+) YR DISCNT DISCOUNTED

COST(-) OC FACTR SAVINGS(+)/

(1) (2) (3) COST(-)(4) SAVINGS(+)/ COST(-)(4) d. TOTAL 0. C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)\$ 35319. 4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))\$ 5. SIMPLE PAYBACK PERIOD (1G/4) 7.64 YEARS 6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) \$ 523760. 7. SAVINGS TO INVESTMENT RATIO (SIR) = (6 / 1G) = 2.37 (IF < 1 PROJECT DOES NOT QUALIFY) 8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): 7.54 %

______ BLDG 2936 Date: 23-Nov-94 INSTALL INFARED HEATING SYSTEM COST ESTIMATE Description: LIMITED EEAP(HGR) Bid Date: Project: FORT BRAGG, N.C. Job #: 94013.04 Location: City indx:Raleigh, NC Sq. footage: Line # Description Manhours Matl Labor Equipment Sub ______ PAVEMENT REMOVAL, BITUMINOUS, 4" TO 6" THICK 0205541750 40.00 S.Y. 0.00 1.73 2.50 Unit values 0.10 0.00 3.80 \$0 \$69 \$100 \$0 \$169 Totals SITE REMOVAL, STEEL PIPE, WELDED CONNECTION, 0205543200 4000.00 L.F. UP TO 4"DIAMETER 2.61 0.15 0.00 1.06 0.00 3.68 Unit values 600.00 \$0 \$10,450 \$4,255 \$0 Totals \$14,705 0207180380 HVAC DEMO, BOILER GAS/OIL STL >150MBH (qty) Ea. 0.00 0.00 268.07 0.00 268.07 Unit values 12.00 Totals 0.00 \$0 \$0 \$0 \$0 \$0 HVAC DEMO, MECH EOPT HEAVY ITEM 0207183600 2.00 Ton 0.00 0.00 0.00 314.87 14.55 314.87 Unit values \$0 29.09 \$0 \$630 \$0 Totals \$630 0208400600 REMOVE PIPE INSULATION UP TO 4" DIAMETER PIPE 4000.00 L.F. Unit values 0.07 0.00 1.63 0.20 0.00 1.83 Totals 284.00 \$0 \$6,536 \$783 \$0 \$7,319 REMOVE INSULATION FROM PIPE FITTING, UP TO 4" 0208401000 DIAMETER PIPE 500.00 Ea. Unit values 0.20 0.00 4.60 0.56 0.00 5.16 Totals 100.00 \$0 \$2,298 \$281 \$0 \$2,579 0222541900 TAMPING TRENCH B'FILL, VIBRATING PLATE, ADD 25.00 C.Y. 0.00 1.99 Unit values 0.09 1.44 0.55 0.00 2.23 \$14 \$50 Totals \$0 \$36 \$0 TRENCH EXCVTNG 40HP CHNTRNCHR&BKFL 12"W24"D 0222582800 250.00 L.F. 0.00 0.20 0.20 0.00 0.39 Unit values 0.01 \$98 Totals 2.50 \$0 \$49 \$49 \$0 0251040380 ASPHALTIC CONCRETE PAVEMENT, PAVING, WEARING

Unit values Totals	COURSE, 2" 0.02 0.60	2.96	0.27 \$11	0.25 \$10	40.00 S 0.00 \$0	3.48
0260120200	BEDDING, FO	R PIPE IN	N TRENCH S	AND, DEAD O	R 5.00 C	· v
Unit values Totals	0.16 0.80	3.79 \$19	2.79 \$14	1.13 \$6	0.00	7.71 \$39
0260120500	BEDDING, PL	ACING IN	TRENCH		.	
Unit values Totals	0.09 0.45	0.00	1.44 \$7	0.55	5.00 C 0.00 \$0	1.99
0266907800					1 00 5	· a
Unit values Totals	1.56 1.56	404.00 \$404	29.36 \$29	4.89 \$5	0.00	438.25 \$438
0268520150	GAS SERVICE	& DISTRI	B PIPING,	POLYETHYLEN	E,60- 260.00 I	,.F.
Unit values Totals	PSI 1-1/4"D 0.06 15.60	0.63 \$163	1.10 \$285	0.00 \$0	0.00 \$0	1.72 \$448
0268520600	GAS SERVICE END.TAR COA	&DISTRIB T&WRAP 1-	PIPING, SCI	H40 STEEL P	LAIN 50.00 I	.F.
Unit values Totals	END, TAR COA 0.11 5.70	3.40 \$170	2.63 \$131	0.15 \$8	0.00 \$0	6.19 \$309

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Line #	Descripti	on				
	Manhours	Matl	Labor	Equipment	Sub	Total
=======================================	=======	=======			======	
U02 SITEWORK	1047	\$874	\$20,545	\$5,514	\$0	\$26,933
1551153320	HTG BR GA	S CI STD H	TWR GOP 2	2000 MBH		
Unit values	84.21 84.21			0.00 \$0		Ea. 13863.88 \$13,864
1554510245 Unit values Totals	(See Atta	ched Estim 0.00	nate for o	GAS ELEC IGN letails) 89623.00 \$89,623	0.00	LS 89623.00 \$89,623
1562600137		ANCE REGUL 4" PIPE SI		JBLE DIAPHRA	GM 1.00	Ea.
Unit values Totals		225.77 \$226		0.00 \$0		234.91 \$235
U15 MECHANICAL	85	\$12,714	\$1,385	\$89,623	\$0	\$103,722

Line #	Description							
	Manhours	Matl	Labor	Equipment	Sub	Total		
ESTIMATE TOTAL	1132	\$13,588	\$21,930	\$95,137	\$0	\$130,655		
SALES TAX MATL MARKUP	0.00% 0.00%	\$0 \$0						
LABOR MARKUP EQUIPT MARKUP SUB MARKUP	0.00% 0.00% 0.00%		\$0	\$0	\$0			
	ONTINGENC	\$13,588	\$21,930	\$95,137	•	6120 (
CONTINGENCY BOND	20.00% 0.00%	\$13,500	\$21,930	\$35 , 13/	\$0	\$130,655 \$26,131 \$0		
PROFIT	10.00%					\$13,066		
JOB TOTAL						\$169,852		

JOB TOTAL

\$169,852

Estimate: BLDG 2936 Date: 23-Nov-94
Description: INSTALL INFARED HEATING SYSTEM COST ESTIMATE
Project: LIMITED EEAP(HGR) Bid Date:

Location: FORT BRAGG, N.C. Job #:
Sq. footage: ******* City in 94013.04 City indx:Raleigh, NC

==========	SUMMARY					
	Manhours	Matl	Labor	Equipment	Sub	Total
=======================================			=======	========		========
U02 SITEWORK U15 MECHANICAL	1047 85	\$874 \$12,714	\$20,545 \$1,385	\$5,514 \$89,623	\$0 \$0	\$26,933 \$103,722
TOTAL	1132	\$13,588	\$21,930	\$95,137	\$0	\$130,655
SALES TAX MATL MARKUP LABOR MARKUP EQUIPT MARKUP	0.00% 0.00% 0.00% 0.00%	\$0 \$0	\$0	\$0		
SUB MARKUP	0.00%			4.5	\$0	
TOTAL BEFORE COCONTINGENCY BOND PROFIT	ONTINGENC 20.00% 0.00% 10.00%	\$13,588	\$21,930	\$95,137	\$0	\$130,655 \$26,131 \$0 \$13,066

LIFE CYCLE COST ANALYSIS SUMMARY

ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP)

INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3 PROJECT NO. & TITLE: 94013.04 LES: ECO2 - NAT GAS INFRARED HEAT FISCAL YEAR 95 DISCRETE PORTION NAME: ECO
ANALYSIS DATE: 12-12-94 ECONOMIC LIFE 20 YEARS PREPARED BY: G.B. LOFLIN 1. INVESTMENT A. CONSTRUCTION COST \$ 156174. C. DESIGN COST 7809. C. DESIGN COST \$ 7809. D. TOTAL COST (1A+1B+1C) \$ 171792. 0. 0. E. SALVAGE VALUE OF EXISTING EQUIPMENT \$ F. PUBLIC UTILITY COMPANY REBATE G. TOTAL INVESTMENT (1D - 1E - 1F) 171792. 2. ENERGY SAVINGS (+) / COST (-) DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1994 UNIT COST SAVINGS ANNUAL \$ DISCOUNT DISCOUNTED \$/ MWH(1) MWH/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5) FUEL 726. 15.08 10952. 45104. 18.57 837586. 0. 21.02 18.58 16.83 -342407. 0. 17.38 0. 0. 14.88 0. 506131. 3. NON ENERGY SAVINGS(+) / COST(-) \$ A. ANNUAL RECURRING (+/-) 138. (1) DISCOUNT FACTOR (TABLE A) 14.88 (2) DISCOUNTED SAVING/COST (3A X 3A1) 2051. B. NON RECURRING SAVINGS(+) / COSTS(-) SAVINGS(+) YR DISCNT
COST(-) OC FACTR
(1) (2) (3) DISCOUNTED ITEM SAVINGS(+)/ COST(-)(4) d. TOTAL 0. C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)\$ 2051. 4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))\$ 5. SIMPLE PAYBACK PERIOD (1G/4) 6.24 YEARS 6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) \$ 508182. 7. SAVINGS TO INVESTMENT RATIO (SIR) = (6 / 1G) =2.96 (IF < 1 PROJECT DOES NOT QUALIFY) 8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): 8.74 %

LIFE CYCLE COST ANALYSIS SUMMARY STUDY: 3007E02B ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID FY95 (92) INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3 PROJECT NO. & TITLE: 94013.04 LES: ECO2 - NAT GAS INFRARED HEAT FISCAL YEAR 95 DISCRETE PORTION NAME: ECO ANALYSIS DATE: 12-12-94 ECONOMIC LIFE 20 YEARS PREPARED BY: G.B. LOFLIN 1. INVESTMENT A. CONSTRUCTION COST \$ 187309. B. SIOH \$ 9365. C. DESIGN COST \$ 9365. D. TOTAL COST (1A+1B+1C) \$ 206039. B. SIOH C. DESIGN COST 9365. E. SALVAGE VALUE OF EXISTING EQUIPMENT \$
F. PUBLIC UTILITY COMPANY REBATE \$ 0. 0. G. TOTAL INVESTMENT (1D - 1E - 1F) 206039. 2. ENERGY SAVINGS (+) / COST (-) DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1994 UNIT COST SAVINGS ANNUAL \$ DISCOUNT DISCOUNTED \$/MWH(1) MWH/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5) FUEL A. ELECT \$ 34.95 21. \$ 726.
B. DIST \$ 19.18 2352. \$ 45104.
C. RESID \$.00 0. \$ 0.
D. NAT G \$ 13.44 -1371. \$ -18429.
E. COAL \$.00 0. \$ 0.
F. PPG \$.00 0. \$ 0.
M. DEMAND SAVINGS \$ 0.
N. TOTAL 1001. \$ 27402. 726. 15.08 10952. 18.57 837586. 21.02 18.58 16.83 17.38 14.88 0. 0. 0. 0. 506131. 3. NON ENERGY SAVINGS(+) / COST(-) A. ANNUAL RECURRING (+/-) \$ 138. (1) DISCOUNT FACTOR (TABLE A) 14.88 (2) DISCOUNTED SAVING/COST (3A X 3A1) 2051. B. NON RECURRING SAVINGS(+) / COSTS(-) SAVINGS(+) YR DISCNT DISCOUNTED COST(-) OC FACTR SAVINGS(+)/ COST(-) OC (1) (2) ITEM (3) COST(-)(4) d. TOTAL \$ 0. C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)\$ 2051. 4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))\$ 27540. 5. SIMPLE PAYBACK PERIOD (1G/4) 7.48 YEARS 6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) \$ 508182. 7. SAVINGS TO INVESTMENT RATIO (SIR) = (6 / 1G) =2.47 (IF < 1 PROJECT DOES NOT QUALIFY) 8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): 7.76 %

LIFE CYCLE COST ANALYSIS SUMMARY

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Estimate: Description: Project: Location: Sq. footage:	BLDG 3007 INSTALL INI LIMITED EEZ FORT BRAGG	FARED HI AP(HGR) , N.C.	Date: EATING SYS Bid Date: Job #: Citv indx	23-Nov-94 STEM COST ES' 94013.04 S:Raleigh, No	TIMATE C	
Line #	Description	n				
	Manhours	Matl	Labor	Equipment	Sub	Total
=======================================						
0205541750	PAVEMENT RI	EMOVAL,	BITUMINOU	JS, 4" TO 6"	THICK 40.00	S.Y.
Unit values Totals	0.10 3.80	0.00 \$0	1.73 \$69	2.50 \$100	0.00	4.23
0205543200	SITE REMOVA	AL,STEEI IAMETER	L PIPE,WEI	DED CONNECT	ION, 3000.00	L.F.
Unit values Totals	0.15 450.00	0.00 \$0	2.61 \$7,838	1.06	0.00 \$0	3.68 \$11,029
0207183600	HVAC DEMO,	MECH EQI	PT HEAVY I	TEM	3.00	Ton
Unit values Totals	14.55 43.64	0.00 \$0	314.87 \$945	0.00	0.00	314.87 \$945
0208400600	REMOVE PIPE	E INSULA	ATION UP T	O 4" DIAMETI	ER PIPE 3000.00	
Unit values Totals	0.07 213.00	0.00 \$0	1.63 \$4,902	0.20	0.00	1.83 \$5,489
0208401000	ם משתישאאדת	ים ח		FITTING, U	400 00	E-
Unit values Totals	0.20	0.00	4.60 \$1,838	0.56 \$225	0.00	5.16 \$2,063
0222541900	TAMPING TRE	ENCH B'	FILL, VIBR	ATING PLATE	, ADD 60.00	C Y.
Unit values Totals	0.09 5.34	0.00 \$0		0.55 \$33	0.00	1.99
0222582800	TRENCH EXC	JTNG 40H	HP CHNTRNC	HR&BKFL 12"V	724"D 600.00	J.F.
Unit values Totals	0.01 6.00			0.20 \$117	0.00	0.39 \$234
0251040380	ASPHALTIC (COURSE, 2"		E PAVEMENT	, PAVING, WE	EARING 40.00	S.Y.
Unit values Totals	0.02	2.96		0.25 \$10	0.00	3.48

0260120200	D 3 3 777				7000	C V
Unit values Totals	0.16	3.79 \$38	2.79 \$28	1.13 \$11	0.00	7.71 \$77
0260120500	BEDDING,	PLACING IN '	TRENCH		10.00	CV
Unit values Totals	0.09 0.89	0.00 \$0	1.44 \$14	0.55	0.00	1.99
0266907800	CUT IN VA	LVES, W/DUC	K TIP GASH	KET, 4" DIA	METER 1.00	Po.
Unit values Totals	1.56 1.56	404.00 \$404	29.36 \$29	4.89 \$5	0.00	438.25
0268520150	GAS SERVI	CE & DISTRI	B PIPING, P	POLYETHYLEN:	E,60-	T
Unit values Totals	0.06 36.60	"DIAM SDR 10 0.63 \$382	1.10 \$670	0.00 \$0	0.00	1.72 \$1,052
0268520600	GAS SERVI	CE&DISTRIB	PIPING, SCH	440 STEEL P	LAIN	T 17
Unit values Totals	0.11 5.70	OAT&WRAP 1-1 3.40 \$170	2.63 \$131	0.15 \$8	0.00 \$0	6.19 \$309

Line #	Descripti	on				
	Manhours	Matl	Labor	Equipment	Sub	Total
=======================================	=======					
U02 SITEWORK	849	\$1,112	\$16,678	\$4,293	\$0	\$22,083
1531106180		ML 100 <r o<="" td=""><td></td><td>BH 192 GPH</td><td>1.00</td><td>Fa</td></r>		BH 192 GPH	1.00	Fa
Unit values Totals	13.33		226.88	0.00 \$0	0.00	
1551153320	HTG BR GA	S CI STD H	ITWR GOP 2	000 MBH		_
Unit values Totals		12487.50 \$12,488				Ea. 13863.88 \$13,864
1554510245 Unit values Totals		ched Estim	ate for d 0.00	AS ELEC IGN letails) 81627.00 \$81,627		LS 81627.00 \$81,627
1562600137		ANCE REGUL 4" PIPE SI		BLE DIAPHRAC	3M 1.00	F-2
Unit values Totals	0.53	225.77 \$226			0.00	234.91 \$235
U15 MECHANICAL	99	\$14,812	\$1,612	\$81,627	\$0	\$98,051

Line #	Descripti	on				
	Manhours	Matl	Labor	Equipment	Sub	Total
	=======	:	=====:		======	========
ESTIMATE TOTAL	948	\$15,924	\$18,290	\$85,920	\$0	\$120,134
SALES TAX MATL MARKUP LABOR MARKUP EOUIPT MARKUP	0.00% 0.00% 0.00% 0.00%	\$0 \$0	\$0	\$0		
SUB MARKUP	0.00%			4.5	\$0	
TOTAL BEFORE CONTINGENCY BOND PROFIT	ONTINGENC 20.00% 0.00% 10.00%	\$15,924	\$18,290	\$85,920	\$0	\$120,134 \$24,027 \$0 \$12,013
JOB TOTAL						\$156.174

Estimate: BLDG 3007 Date: 23-Nov-94
Description: INSTALL INFARED HEATING SYSTEM COST ESTIMATE
Project: LIMITED EEAP(HGR) Bid Date:
Location: FORT BRAGG, N.C. Job #: 94013.04
Sq. footage: ******* City indx:Raleigh, NC

	S'	UMMARY				
	Manhours	Matl	Labor	Equipment	Sub	Total
	=======	=======================================	= = = = = = = = :		======	
U02 SITEWORK U15 MECHANICAL	849 99	\$1,112 \$14,812	\$16,678 \$1,612	\$4,293 \$81,627	\$0 \$0	\$22,083 \$98,051
TOTAL	948	\$15,924	\$18,290	\$85,920	\$0	\$120,134
SALES TAX MATL MARKUP LABOR MARKUP	0.00% 0.00% 0.00%	\$0 \$0	\$0			
EQUIPT MARKUP SUB MARKUP	0.00% 0.00%			\$0	\$0	
TOTAL BEFORE CO CONTINGENCY BOND PROFIT	ONTINGENC 20.00% 0.00% 10.00%	\$15,924	\$18,290	\$85,920	\$0	\$120,134 \$24,027 \$0 \$12,013
JOB TOTAL						\$156,174

LIFE CYCLE COST ANALYSIS SUMMARY

ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP)

INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3

PROJECT NO. 4 CENSUS: 3 PROJECT NO. & TITLE: 94013.04 LES: ECO2 - NAT GAS INFRARED HEAT FISCAL YEAR 95 DISCRETE PORTION NAME: ECO ANALYSIS DATE: 12-12-94 ECONOMIC LIFE 20 YEARS PREPARED BY: G.B. LOFLIN 1. INVESTMENT A. CONSTRUCTION COST \$ 132691. B. SIOH \$ 6635. C. DESIGN COST \$ 6635. D. TOTAL COST (1A+1B+1C) \$ 145961. E. SALVAGE VALUE OF EXISTING EQUIPMENT \$
F. PUBLIC UTILITY COMPANY REBATE \$ 0. 0. G. TOTAL INVESTMENT (1D - 1E - 1F) 145961. 2. ENERGY SAVINGS (+) / COST (-) DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1994 UNIT COST SAVINGS ANNUAL \$ DISCOUNT DISCOUNTED \$/ MWH(1) MWH/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5) FUEL 11379. 1194617. 0. -667866. 0. O. 0. 538130. 3. NON ENERGY SAVINGS (+) / COST (-) \$ 2586. 14.88 \$ 38479. A. ANNUAL RECURRING (+/-) (1) DISCOUNT FACTOR (TABLE A) (2) DISCOUNTED SAVING/COST (3A X 3A1) B. NON RECURRING SAVINGS(+) / COSTS(-) SAVINGS(+) YR DISCNT DISCOUNTED

COST(-) OC FACTR SAVINGS(+)/

(1) (2) (3) COST(-)(4) COST(-) OC FACTR
(1) (2) (3) ITEM d. TOTAL \$ 0. C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)\$ 38479. 4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))\$ 31726. 5. SIMPLE PAYBACK PERIOD (1G/4) 4.60 YEARS 6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) \$ 576609. 7. SAVINGS TO INVESTMENT RATIO (SIR) = (6 / 1G) = 3.95 (IF < 1 PROJECT DOES NOT QUALIFY) 8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): 10.32 %

LIFE CYCLE COST ANALYSIS SUMMARY ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID FY95 (92) INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3 PROJECT NO. & TITLE: 94013.04 LES: ECO2 - NAT GAS INFRARED HEAT FISCAL YEAR 95 DISCRETE PORTION NAME: ECO ANALYSIS DATE: 12-12-94 ECONOMIC LIFE 20 YEARS PREPARED BY: G.B. LOFLIN 1. INVESTMENT A. CONSTRUCTION COST \$ 163826. 8191. B. SIOH E. SALVAGE VALUE OF EXISTING EQUIPMENT \$ F. PUBLIC UTILITY COMPANY REBATE \$ 0. G. TOTAL INVESTMENT (1D - 1E - 1F) 180208. 2. ENERGY SAVINGS (+) / COST (-) DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1994 UNIT COST SAVINGS ANNUAL \$ DISCOUNT DISCOUNTED FUEL \$/ MWH(1) MWH/YR(2) SAVINGS(3) FACTOR(4) SAVINGS (5) A. ELECT \$ 34.95 22. \$
B. DIST \$ 19.18 3354. \$
C. RESID \$.00 0. \$
D. NAT G \$ 13.44 -2675. \$
E. COAL \$.00 0. \$
F. PPG \$.00 0. \$ 755. 15.08 11379. \$ 64330. 18.57 1194617. \$ 0. \$ -35945. \$ 0. \$ 0. 21.02 -667866. 18.58 0. 16.83 17.38 0. M. DEMAND SAVINGS 0. 14.88 0. 701. \$ 29140. N. TOTAL 538130. 3. NON ENERGY SAVINGS(+) / COST(-) A. ANNUAL RECURRING (+/-)\$ 2586. (1) DISCOUNT FACTOR (TABLE A) 14.88 (2) DISCOUNTED SAVING/COST (3A X 3A1) 38479. \$ B. NON RECURRING SAVINGS(+) / COSTS(-) SAVINGS(+) YR DISCNT COST(-) OC FACTR DISCNT DISCOUNTED COST(-) ITEM SAVINGS(+)/ (1) (2) (3) COST(-)(4) d. TOTAL 0. C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)\$ 4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))\$ 5. SIMPLE PAYBACK PERIOD (1G/4) 5.68 YEARS 6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) \$ 576609. 7. SAVINGS TO INVESTMENT RATIO (SIR) = (6 / 1G) =(IF < 1 PROJECT DOES NOT QUALIFY) 8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): 9.17 %

STUDY: 3262E02B

________ BLDG 3262 23-Nov-94 Estimate: Date: INSTALL INFARED HEATING SYSTEM COST ESTIMATE Description: LIMITED EEAP(HGR) Bid Date: Project: FORT BRAGG, N.C. Job #: 94013.04 Location: City indx:Raleigh, NC ***** Sq. footage: Description Line # ______ Sub Manhours Matl Labor Equipment Total ______ PAVEMENT REMOVAL, BITUMINOUS, 4" TO 6" THICK 0205541750 30.00 S.Y. 1.73 2.50 Unit values 0.10 0.00 0.00 4.23 Totals 2.85 \$0 \$52 \$75 \$0 \$127 0205543200 SITE REMOVAL, STEEL PIPE, WELDED CONNECTION, UP TO 4"DIAMETER 2000.00 L.F. Unit values 0.15 0.00 2.61 1.06 0.00 3.68 Totals 300.00 \$0 \$5,225 \$2,128 \$0 \$7,353 0207180380 HVAC DEMO, BOILER GAS/OIL STL >150MBH 1.00 Ea. 0.00 12.00 0.00 268.07 0.00 Unit values 268.07 Totals 12.00 \$0 \$268 \$0 \$0 \$268 0207183600 HVAC DEMO, MECH EQPT HEAVY ITEM 4.00 Ton Unit values 14.55 0.00 0.00 0.00 314.87 314.87 Totals 58.18 \$0 \$1,259 \$0 \$0 \$1,259 0208400600 REMOVE PIPE INSULATION UP TO 4" DIAMETER PIPE 2000.00 L.F. 0.20 Unit values 0.07 0.00 1.63 0.00 1.83 Totals 142.00 \$0 \$3,268 \$391 \$0 \$3,659 REMOVE INSULATION FROM PIPE FITTING, UP TO 4" 0208401000 DIAMETER PIPE 250.00 Ea. Unit values 0.20 0.00 4.60 0.56 5.16 0.00 Totals 50.00 \$0 \$1,149 \$140 \$0 \$1,289 0222541900 TAMPING TRENCH B'FILL, VIBRATING PLATE, ADD 15.00 C.Y. Unit values 0.09 0.00 1.44 0.55 0.00 1.99 Totals \$8 1.34 \$0 \$22 \$0 \$30 0222582800 TRENCH EXCVTNG 40HP CHNTRNCHR&BKFL 12"W24"D 200.00 L.F. 0.00 Unit values 0.20 0.20 0.00 0.39 0.01 Totals 2.00 \$0 \$39 \$39 \$0 \$78 0251040380 ASPHALTIC CONCRETE PAVEMENT, PAVING, WEARING

Unit values Totals	COURSE, 2" 0.02 0.45	THICK 2.96 \$89	0.27 \$8	0.25 \$7	30.00 S. 0.00 \$0	Y. 3.48 \$104	
0260120200	BEDDING, FO	OR PIPE IN	TRENCH SA	ND, DEAD O	R 8.00 C.	v	
Unit values Totals	0.16 1.28	3.79 \$30	2.79 \$22	1.13 \$9	0.00		
0260120500	BEDDING, PI	ACING IN	TRENCH		0.00.0		
Unit values Totals	0.09	0.00 \$0	1.44 \$12	0.55 \$4	8.00 C. 0.00 \$0	1.99	
0266907800	CUT IN VALV	res, w/Duc	K TIP GASK	ET, 4" DIAM			
Unit values Totals	1.56 1.56	404.00 \$404	29.36 \$29	4.89 \$5	1.00 Ea 0.00 \$0	438.25	
0268520150	GAS SERVICE	& DISTRI	B PIPING, P	OLYETHYLEN	3,60-	_	
Unit values Totals	0.06 12.60	0.63 \$132	1.10 \$231	0.00 \$0	0.00 L. \$0	1.72 \$363	
0268520600	GAS SERVICE	&DISTRIB	PIPING, SCH	40 STEEL PI	AIN	רי	
Unit values Totals	END, TAR COA 0.11 5.70	3.40 \$170	2.63 \$131	0.15 \$8	0.00 L. 80	6.19 \$309	

Line #	Descripti	on				
	Manhours	Matl	Labor	Equipment	Sub	Total
						
U02 SITEWORK	591	\$825	\$11,715	\$2,814	\$0	\$15,354
1551153320	HTG BR GA	S CT STD H	TWR GOP	2000 MBH		
Unit values Totals	84.21		1376.38	0.00		Ea. 13863.88 \$13,864
1554510245 Unit values Totals	(See Atta	ched Estim 0.00	nate for o	GAS ELEC IGN details) 72617.00 \$72,617	0.00	LS 72617.00 \$72,617
1562600137 Unit values Totals	TYPE 1-1/-	4" PIPE SI 225.77	ZE 9.14	JBLE DIAPHRAG 0.00 \$0	1.00	234.91
U15 MECHANICAL	85	\$12,714	\$1,385	\$72,617	\$0	\$86,716

Line #	Descripti	on				
	Manhours	Matl	Labor	Equipment	Sub	Total
=========						
ESTIMATE TOTAL	676	\$13,539	\$13,100	\$75,431	\$0	\$102,070
SALES TAX MATL MARKUP	0.00% 0.00%	\$0 \$0				
LABOR MARKUP EQUIPT MARKUP	0.00%		\$0	\$0		
SUB MARKUP	0.00%				\$0	
TOTAL BEFORE CONTINGENCY BOND	ONTINGENC 20.00% 0.00%	\$13,539	\$13,100	\$75,431	\$0	\$102,070 \$20,414 \$0
PROFIT	10.00%					\$10,207
JOB TOTAL						\$132,691

Estimate: BLDG 3262 Date: 23-Nov-94
Description: INSTALL INFARED HEATING SYSTEM COST ESTIMATE
Project: LIMITED EEAP(HGR) Bid Date:
Location: FORT BRAGG, N.C. Job #: 94013.04
Sq. footage: ******* City indx:Raleigh, NC

	======== S	UMMARY				
	Manhours	Matl	Labor	Equipment	Sub	Total
=========	=======	========				
U02 SITEWORK U15 MECHANICAL	591 85	\$825 \$12,714	\$11,715 \$1,385	\$2,814 \$72,617	\$0 \$0	\$15,354 \$86,716
TOTAL	676	\$13,539	\$13,100	\$75,431	\$0	\$102,070
SALES TAX MATL MARKUP LABOR MARKUP	0.00% 0.00% 0.00%	\$0 \$0	\$0			
EQUIPT MARKUP SUB MARKUP	0.00%		ΨΨ	\$0	\$0	
CONTINGENCY BOND	ONTINGENC 20.00% 0.00%	\$13,539	\$13,100	\$75,431	\$0	\$102,070 \$20,414 \$0
PROFIT	10.00%					\$10,207
JOB TOTAL						\$132,691

LIFE CYCLE COST ANALYSIS SUMMARY ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID FY95 (92) INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3 PROJECT NO. & TITLE: 94013.04 LES: ECO2 - NAT GAS INFRARED HEAT FISCAL YEAR 95 DISCRETE PORTION NAME: ECO ANALYSIS DATE: 12-05-94 ECONOMIC LIFE 20 YEARS PREPARED BY: G.B. LOFLIN 1. INVESTMENT A. CONSTRUCTION COST \$ 71897. 3595. B. SIOH C. DESIGN COST \$ 3595. D. TOTAL COST (1A+1B+1C) \$ 79087. E. SALVAGE VALUE OF EXISTING EQUIPMENT \$ F. PUBLIC UTILITY COMPANY REBATE Ο. G. TOTAL INVESTMENT (1D - 1E - 1F) 2. ENERGY SAVINGS (+) / COST (-) DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1994 SAVINGS ANNUAL \$ DISCOUNT UNIT COST DISCOUNTED MWH/YR(2) FUEL \$/ MWH(1) SAVINGS(3) FACTOR(4) SAVINGS (5) -30. 1346. 0. -840. 0. A. ELECT \$ 34.95 B. DIST \$ 19.18 -1060. 15.08 -15980.25813. 479351. 18.57 0. \$ 0. 840. \$ -11286. 0. \$ 0. 0. \$ 0. 476. \$ 13468. C. RESID \$.00 21.02 0. D. NAT G \$ 13.44 18.58 -209688. E. COAL \$.00 F. PPG \$.00 16.83 0. 17.38 0. M. DEMAND SAVINGS 14.88 0. N. TOTAL 253683. 3. NON ENERGY SAVINGS(+) / COST(-) A. ANNUAL RECURRING (+/-) \$ 4989. (1) DISCOUNT FACTOR (TABLE A) 14.88 (2) DISCOUNTED SAVING/COST (3A X 3A1) 74234. B. NON RECURRING SAVINGS(+) / COSTS(-) SAVINGS(+) YR DISCNT DISCOUNTED ITEM COST(-) OC FACTR SAVINGS(+)/ (1) (2) (3) COST(-)(4)d. TOTAL 0. C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)\$ 74234. 4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))\$ 5. SIMPLE PAYBACK PERIOD (1G/4) 4.29 YEARS 6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) \$ 327917. 7. SAVINGS TO INVESTMENT RATIO (SIR) = (6 / 1G) =(IF < 1 PROJECT DOES NOT QUALIFY) 8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): 10.59 %

STUDY: 3354E02A

ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP)

LLATION & LOCATION FORT BRACE

LCCID FY95 (92) LCCID FY95 (92) INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3 PROJECT NO. & TITLE: 94013.04 LES: ECO2 - NAT GAS INFRARED HEAT FISCAL YEAR 95 DISCRETE PORTION NAME: ECO ANALYSIS DATE: 12-05-94 ECONOMIC LIFE 20 YEARS PREPARED BY: G.B. LOFLIN 1. INVESTMENT A. CONSTRUCTION COST \$ 103032.

B. SIOH \$ 5152.

C. DESIGN COST \$ 5152.

D. TOTAL COST (1A+1B+1C) \$ 113336. 0. 0. E. SALVAGE VALUE OF EXISTING EQUIPMENT \$
F. PUBLIC UTILITY COMPANY REBATE \$ G. TOTAL INVESTMENT (1D - 1E - 1F) 113336. 2. ENERGY SAVINGS (+) / COST (-) DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1994 UNIT COST SAVINGS ANNUAL \$ DISCOUNTED FUEL \$/ MWH(1) MWH/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5) 3. NON ENERGY SAVINGS(+) / COST(-) \$ 4989. A. ANNUAL RECURRING (+/-) (1) DISCOUNT FACTOR (TABLE A) 14.88 (2) DISCOUNTED SAVING/COST (3A X 3A1) \$ 74234. B. NON RECURRING SAVINGS(+) / COSTS(-) SAVINGS(+) YR DISCNT COST(-) OC FACTR (1) (2) (3) DISCOUNTED ITEM SAVINGS(+)/ COST(-)(4) d. TOTAL 0. C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)\$ 74234. 4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))\$ 5. SIMPLE PAYBACK PERIOD (1G/4) 6.14 YEARS 6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) \$ 327917. 7. SAVINGS TO INVESTMENT RATIO (SIR) = (6 / 1G) =2.89 (IF < 1 PROJECT DOES NOT QUALIFY) 8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): 8.62 %

LIFE CYCLE COST ANALYSIS SUMMARY

_______ BLDG 3354 Date: 23-Nov-94 INSTALL INFARED HEATING SYSTEM COST ESTIMATE Description: LIMITED EEAP(HGR) Bid Date: Project: FORT BRAGG, N.C. Job #: 94013.04 Location: City indx: Raleigh, NC Sq. footage: Line # Description Manhours Matl Labor Equipment Sub ______ PAVEMENT REMOVAL, BITUMINOUS, 4" TO 6" THICK 0205541750 30.00 S.Y. Unit values 0.00 1.73 0.10 2.50 0.00 4.23 Totals 2.85 \$0 \$52 \$75 \$0 \$127 0205543200 SITE REMOVAL, STEEL PIPE, WELDED CONNECTION, UP TO 4"DIAMETER 1600.00 L.F. Unit values 0.15 0.00 3.68 2.61 1.06 0.00 Totals 240.00 \$0 \$4,180 \$1,702 \$0 \$5,882 0207180380 HVAC DEMO, BOILER GAS/OIL STL >150MBH (qty) Ea. Unit values 12.00 0.00 268.07 0.00 0.00 268.07 Totals 0.00 \$0 \$0 \$0 \$0 \$0 0207183600 HVAC DEMO, MECH EQPT HEAVY ITEM 1.50 Ton 14.55 0.00 Unit values 314.87 0.00 0.00 314.87 Totals 21.82 \$0 \$472 \$0 \$0 \$472 0208400600 REMOVE PIPE INSULATION UP TO 4" DIAMETER PIPE 1400.00 L.F. Unit values 0.07 0.00 1.63 0.20 0.00 1.83 Totals \$274 99.40 \$0 \$2,287 \$0 \$2,561 REMOVE INSULATION FROM PIPE FITTING, UP TO 4" 0208401000 DIAMETER PIPE 160.00 Ea. Unit values 0.20 0.00 4.60 0.56 0.00 5.16 Totals 32.00 \$0 \$735 \$90 \$0 \$825 0222541900 TAMPING TRENCH B'FILL, VIBRATING PLATE, ADD 15.00 C.Y. Unit values 0.09 0.00 1.44 0.55 0.00 1.99 Totals 1.34 \$0 \$22 \$8 \$0 \$30 0222582800 TRENCH EXCVTNG 40HP CHNTRNCHR&BKFL 12"W24"D 200.00 L.F. Unit values 0.01 0.00 0.20 0.20 0.00 0.39 Totals 2.00 \$0 \$39 \$39 \$0 \$78 0251040380 ASPHALTIC CONCRETE PAVEMENT, PAVING, WEARING

Unit values Totals	COURSE, 2" 0.02 0.45	THICK 2.96 \$89	0.27	0.25 \$7	30.00 S. 0.00 \$0	3.48
0260120200	TO TO DITTE				0 00 0	v
Unit values Totals	0.16 1.28	3.79 \$30	2.79 \$22	1.13 \$9	0.00 C. 0.00 \$0	7.71
0260120500	BEDDING, P	LACING IN	TRENCH			
Unit values Totals	0.09 0.71	0.00 \$0	1.44 \$12	0.55 \$4	8.00 C. 0.00 \$0	1.99
0266907800	CUT IN VAL	VES, W/DUC	K TIP GASK	ET, 4" DIAM		
Unit values Totals	1.56 1.56	404.00 \$404	29.36 \$29	4.89 \$5	1.00 Ea 0.00 \$0	438.25
0268520150	GAS SERVIC	E & DISTRI	B PIPING, P	OLYETHYLENE	,60-	-
Unit values Totals	0.06 12.60	0.63 \$132	1.10 \$231	0.00	0.00 L. \$0	1.72 \$363
0268520600	GAS SERVIC	E&DISTRIB	PIPING,SCH	40 STEEL PL	AIN	무
Unit values Totals	0.11 5.70	3.40 \$170	2.63 \$131	0.15 \$8	0.00	6.19 \$309

Line #	Descriptio	n				
	Manhours	Matl	Labor	Equipment	Sub	Total
U02 SITEWORK	422	\$825	\$8,220	\$2,221	\$0	\$11,266
1554510245 Unit values Totals	HTG CO-RAY (See Attac 0.00 0.00				1.00 0.00 \$0	
1562600137 Unit values Totals	GAS APPLIA TYPE 1-1/4 0.53 0.53				M 1.00 0.00 \$0	Ea. 234.91 \$235
U15 MECHANICAL	1	\$226	\$9	\$43,804	\$0	\$44,039

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Line #	Description	on				
	Manhours	Matl	Labor	Equipment	Sub	Total
	:=======	======	=======		=======	=======
ESTIMATE TOTAL	423	\$1,051	\$8,229	\$46,025	\$0	\$55,305
SALES TAX	0.00%	\$0 \$0				
MATL MARKUP LABOR MARKUP	0.00% 0.00%	\$0	\$0			
EQUIPT MARKUP	0.00% 0.00%			\$0	\$0	
	CONTINGENC	\$1,051	\$8,229	\$46,025	\$0	\$55,305
CONTINGENCY	20.00%	\$1,051	30,229	\$40,025	ŞU	\$11,061
BOND PROFIT	0.00% 10.00%					\$0 \$5,531
JOB TOTAL						\$71,897

Estimate: BLDG 3354 Date: 23-Nov-94
Description: INSTALL INFARED HEATING SYSTEM COST ESTIMATE
Project: LIMITED EEAP(HGR) Bid Date:

Location: FORT BRAGG, N.C. Job #: 94013.04 Sq. footage: ****** City indx:Raleigh, NC

bq. rootage.					•		
• =====================================	Si	UMMARY				=======	
	Manhours	Matl	Labor	Equipment	Sub	Total	
						=======	
U02 SITEWORK U15 MECHANICAL	422	\$825 \$226	\$8,220 \$9	\$2,221 \$43,804	\$0 \$0	\$11,266 \$44,039	
TOTAL	423	\$1,051	\$8,229	\$46,025	\$0	\$55,305	
SALES TAX MATL MARKUP LABOR MARKUP	0.00% 0.00% 0.00%	\$0 \$0	\$0				
EQUIPT MARKUP SUB MARKUP	0.00%		40	\$0	\$0		
TOTAL BEFORE CO CONTINGENCY BOND PROFIT	ONTINGENC 20.00% 0.00% 10.00%	\$1,051	\$8,229	\$46,025	\$0	\$55,305 \$11,061 \$0 \$5,531	
JOB TOTAL						\$71,897	

LIFE CYCLE COST ANALYSIS SUMMARY STUDY: 3637E02A ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID FY95 (92) INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3 PROJECT NO. & TITLE: 94013.04 LES: ECO2 - NAT GAS INFRARED HEAT FISCAL YEAR 95 DISCRETE PORTION NAME: ECO ANALYSIS DATE: 12-12-94 ECONOMIC LIFE 20 YEARS PREPARED BY: G.B. LOFLIN 1. INVESTMENT A. CONSTRUCTION COST 75196. 3760. 3760. B. SIOH C. DESIGN COST D. TOTAL COST (1A+1B+1C) \$ 82716. E. SALVAGE VALUE OF EXISTING EQUIPMENT \$ F. PUBLIC UTILITY COMPANY REBATE G. TOTAL INVESTMENT (1D - 1E - 1F) 82716. 2. ENERGY SAVINGS (+) / COST (-) DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1994 UNIT COST SAVINGS ANNUAL \$ DISCOUNT DISCOUNTED \$/ MWH(1) MWH/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5) DISCOUNTED FUEL \$/ MWH(1) 27. 943. 15.08 A. ELECT \$ 34.95 14220. 1045. B. DIST \$ 19.18 C. RESID \$.00 D. NAT G \$ 13.44 \$ 20049. 18.57 372311. 0. 0. 21.02 0. -7717. \$ -143389. 18.58 -574. 0. 16.83 0. 0. E. COAL \$.00 .00 0. 17.38 0. F. PPG \$ 0. Ο. M. DEMAND SAVINGS 14.88 0. N. TOTAL 498. 13275. 243142. 3. NON ENERGY SAVINGS(+) / COST(-) A. ANNUAL RECURRING (+/-) 100. (1) DISCOUNT FACTOR (TABLE A) 14.88 (2) DISCOUNTED SAVING/COST (3A X 3A1) 1488. B. NON RECURRING SAVINGS (+) / COSTS (-) SAVINGS(+) YR COST(-) OC DISCOUNTED DISCNT FACTR ITEM SAVINGS(+)/ (1) (2) (3) COST(-)(4)Ś d. TOTAL C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)\$ 1488. 4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))\$ 13375. 6.18 YEARS 5. SIMPLE PAYBACK PERIOD (1G/4) \$ 244630. 6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) 7. SAVINGS TO INVESTMENT RATIO
(IF < 1 PROJECT DOES NOT QUALIFY) (SIR) = (6 / 1G) =2.96 8.74 % 8. ADJUSTED INTERNAL RATE OF RETURN (AIRR):

LIFE CYCLE COST ANALYSIS SUMMARY

ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP)

INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3 PROJECT NO. & TITLE: 94013.04 LES: ECO2 - NAT GAS INFRARED HEAT FISCAL YEAR 95 DISCRETE PORTION NAME: ECO ANALYSIS DATE: 12-12-94 ECONOMIC LIFE 20 YEARS PREPARED BY: G.B. LOFLIN 1. INVESTMENT A. CONSTRUCTION COST \$ 106331. 5317. B. SIOH C. DESIGN COST 5317. D. TOTAL COST (1A+1B+1C) \$ 116965. E. SALVAGE VALUE OF EXISTING EQUIPMENT \$ 0. 0. F. PUBLIC UTILITY COMPANY REBATE 116965. G. TOTAL INVESTMENT (1D - 1E - 1F) 2. ENERGY SAVINGS (+) / COST (-) DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1994 UNIT COST SAVINGS ANNUAL \$ DISCOUNT DISCOUNTED \$/MWH(1) MWH/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5) 27. 943. 15.08 14220. A. ELECT \$ 34.95 B. DIST \$ 19.18 1045. 20049. 18.57 372311. C. RESID \$.00 0. 0. 21.02 0. -574. 18.58 D. NAT G \$ 13.44 -7717. -143389. 0. E. COAL \$.00 0. 16.83 0. 0. F. PPG \$.00 0. 0. 17.38 0. M. DEMAND SAVINGS 14.88 0. 243142. N. TOTAL 498. 13275. 3. NON ENERGY SAVINGS(+) / COST(-) A. ANNUAL RECURRING (+/-) \$ 100. (1) DISCOUNT FACTOR (TABLE A) 14.88 (2) DISCOUNTED SAVING/COST (3A X 3A1) \$ 1488. B. NON RECURRING SAVINGS(+) / COSTS(-) SAVINGS(+) YR COST(-) OC DISCNT DISCOUNTED COST(-) TTEM FACTR SAVINGS(+)/ (1) (2) (3) COST(-)(4)0. 0. d. TOTAL \$ C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)\$ 1488. 4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))\$ 13375. 8.75 YEARS 5. SIMPLE PAYBACK PERIOD (1G/4) 244630. 6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) (SIR) = (6 / 1G) =2.09 7. SAVINGS TO INVESTMENT RATIO (IF < 1 PROJECT DOES NOT QUALIFY) 6.87 % 8. ADJUSTED INTERNAL RATE OF RETURN (AIRR):

______ 23-Nov-94 BLDG 3637 Date: INSTALL INFARED HEATING SYSTEM COST ESTIMATE Description: LIMITED EEAP(HGR) Bid Date: Proiect: FORT BRAGG, N.C. Job #: 94013.04 Location: ***** City indx:Raleigh, NC Sq. footage: Description Line # Equipment Matl Labor Manhours ______ PAVEMENT REMOVAL, BITUMINOUS, 4" TO 6" THICK 0205541750 20.00 S.Y. 1.73 2.50 0.00 4.23 Unit values 0.00 0.10 \$0 1.90 \$0 \$35 \$50 \$85 Totals SITE REMOVAL, STEEL PIPE, WELDED CONNECTION, 0205543200 1000.00 L.F. UP TO 4"DIAMETER 3.68 Unit values 0.15 0.00 2.61 1.06 0.00 \$2,613 \$1,064 \$0 \$3,677 Totals 150.00 \$0 HVAC DEMO, BOILER GAS/OIL STL >150MBH 0207180380 1.00 Ea. 0.00 0.00 0.00 268.07 268.07 Unit values 12.00 12.00 \$0 \$268 \$0 \$0 \$268 Totals 0207183600 HVAC DEMO, MECH EQPT HEAVY ITEM 1.00 Ton Unit values 14.55 0.00 314.87 0.00 0.00 314.87 Totals 14.55 \$0 \$315 \$0 \$0 \$315 REMOVE PIPE INSULATION UP TO 4" DIAMETER PIPE 0208400600 1000.00 L.F. 0.07 Unit values 0.00 1.63 0.20 0.00 1.83 \$1,634 \$196 Totals 71.00 \$0 \$1,830 REMOVE INSULATION FROM PIPE FITTING, UP TO 4" 0208401000 125.00 Ea. DIAMETER PIPE 0.20 0.00 4.60 0.56 0.00 5.16 Unit values \$0 Totals \$0 \$574 \$70 \$644 25.00 TAMPING TRENCH B'FILL, VIBRATING PLATE, ADD 0222541900 15.00 C.Y. 1.99 0.55 0.00 1.44 0.00 Unit values 0.09 \$0 \$30 1.34 \$0 \$22 \$8 Totals TRENCH EXCVTNG 40HP CHNTRNCHR&BKFL 12"W24"D 0222582800 150.00 L.F. 0.20 0.20 0.39 Unit values 0.00 0.00 0.01 \$29 \$0 \$58 Totals 1.50 \$0 \$29 0251040380 ASPHALTIC CONCRETE PAVEMENT, PAVING, WEARING

Unit values Totals	COURSE, 2" 0.02 0.30	2.96	0.27 \$5	0.25	20.00 S 0.00 \$0	3.48
0260120200	BEDDING, FO BANK				2.50 C	. Y.
Unit values Totals	0.16 0.40	3.79 \$9	2.79 \$7	1.13	0.00	7.71
0260120500	BEDDING, PL	ACING IN	TRENCH		2.50 C	v
Unit values Totals	0.09 0.22	0.00 \$0	1.44 \$4	0.55	0.00	1.99
0266907800					7 00 17	a
Unit values Totals	1.56 1.56	404.00 \$404	29.36 \$29	4.89 \$5	0.00	438.25 \$438
0268520150	GAS SERVICE	& DISTRI	B PIPING, PO	OLYETHYLEN	E,60-	E.
Unit values Totals	PSI 1-1/4"D 0.06 9.60	0.63 \$100	1.10 \$176	0.00 \$0	0.00	1.72 \$276
0268520600	GAS SERVICE	&DISTRIB	PIPING, SCH	40 STEEL PI	LAIN	. Ŧ
Unit values Totals	END, TAR COA 0.11 5.70	3.40 \$170	2.63 \$131	0.15 \$8	0.00	6.19 \$309

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Line #	Descripti	on				
	Manhours	Matl	Labor	Equipment	Sub	Total
==========		========				
U02 SITEWORK	296	\$742	\$5,842	\$1,439	\$0	\$8,023
1551153320	HTG BR GA	S CI STD F	HTWR GOP 2	2000 MBH	1 00	E o
Unit values Totals			1376.38 \$1,376	0.00 \$0		13863.88 \$13,864
1554510245		Y-VAC INFA		GAS ELEC IGN Retails)	1.00	LS
Unit values Totals			0.00	35721.00 \$35,721	0.00	35721.00 \$35,721
1562600137		ANCE REGUI		JBLE DIAPHRAG	SM 1.00	Fa
Unit values Totals	0.53		9.14	0.00 \$0		234.91 \$235
U15 MECHANICAL	85	\$12,714	\$1,385	\$35,721	\$0	\$49,820

	=======	=======	=======			=======
Line #	Descripti	on				
	Manhours	Matl	Labor	Equipment	Sub	Total
==========	=======		======			
ESTIMATE TOTAL	381	\$13,456	\$7,227	\$37,160	\$0	\$57,843
SALES TAX MATL MARKUP LABOR MARKUP EQUIPT MARKUP SUB MARKUP	0.00% 0.00% 0.00% 0.00% 0.00%	\$0 \$0	\$0	\$0	\$0	
	ONTINGENC 20.00% 0.00% 10.00%	\$13,456	\$7,227	\$37,160	\$0	\$57,843 \$11,569 \$0 \$5,784
JOB TOTAL						\$75,196

\$75,196

JOB TOTAL

Estimate: BLDG 3637 Date: 23-Nov-94
Description: INSTALL INFARED HEATING SYSTEM COST ESTIMATE
Project: LIMITED EEAP(HGR) Bid Date:

Project: LIMITED EEAP(HGR) Bid Dat Location: FORT BRAGG, N.C. Job #: Sq. footage: ****** City in 94013.04 City indx:Raleigh, NC

=======================================	S	UMMARY				
	Manhours	Matl	Labor	Equipment	Sub	Total
=======================================	=======	======		========		
U02 SITEWORK U15 MECHANICAL	296 85	\$742 \$12,714	\$5,842 \$1,385	\$1,439 \$35,721	\$0 \$0	\$8,023 \$49,820
TOTAL	381	\$13,456	\$7,227	\$37,160	\$0	\$57,843
SALES TAX MATL MARKUP LABOR MARKUP	0.00% 0.00% 0.00%	\$0 \$0	\$0			
EQUIPT MARKUP SUB MARKUP	0.00% 0.00%			\$0	\$0	
TOTAL BEFORE CONTINGENCY BOND PROFIT	ONTINGENC 20.00% 0.00% 10.00%	\$13,456	\$7,227	\$37,160	\$0	\$57,843 \$11,569 \$0 \$5,784

ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID FY95 (92)
INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 94013 04 LFS. FCO2 NAT CTC PROJECT NO. & TITLE: 94013.04 LES: ECO2 - NAT GAS INFRARED HEAT FISCAL YEAR 95 DISCRETE PORTION NAME: ECO ANALYSIS DATE: 12-05-94 ECONOMIC LIFE 20 YEARS PREPARED BY: G.B. LOFLIN 1. INVESTMENT A. CONSTRUCTION COST \$ 81151. B. SIOH 4058. 4058. C. DESIGN COST C. DESIGN COST \$ 4058.

D. TOTAL COST (1A+1B+1C) \$ 89267. E. SALVAGE VALUE OF EXISTING EQUIPMENT \$ F. PUBLIC UTILITY COMPANY REBATE G. TOTAL INVESTMENT (1D - 1E - 1F) 89267. 2. ENERGY SAVINGS (+) / COST (-) DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1994 UNIT COST SAVINGS ANNUAL \$ DISCOUNT \$/ MWH(1) MWH/YR(2) SAVINGS(3) FACTOR(4) DISCOUNTED FACTOR(4) SAVINGS(5) 6. \$ 226. 1474. \$ 28273. 0. \$ 0. -1018. \$ -13688. 0. \$ 0. 0. \$ 0. 462. \$ 14811. A. ELECT \$ 34.95 B. DIST \$ 19.18 C. RESID \$.00 15.08 3410. -1018. 525027. 18.57 0. 21.02 18.58 16.83 D. NAT G \$ 13.44 \$ -254325. 16.83 0. E. COAL \$.00 17.38 0. F. PPG \$.00 0. M. DEMAND SAVINGS 14.88 274112. N. TOTAL 3. NON ENERGY SAVINGS(+) / COST(-) \$ 843. A ANNUAL RECURRING (+/-) (1) DISCOUNT FACTOR (TABLE A) 14.88 (2) DISCOUNTED SAVING/COST (3A X 3A1) 12545. B. NON RECURRING SAVINGS (+) / COSTS (-) SAVINGS(+) YR DISCNT COST(-) OC FACTR DISCOUNTED SAVINGS(+)/ VINGS (... COST(-) UC '1) (2) TTEM (3) COST(-)(4)d. TOTAL \$ 0. C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)\$ 12545. 4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))\$ 15654. 5.70 YEARS 5. SIMPLE PAYBACK PERIOD (1G/4) \$ 286657. 6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) (SIR) = (6 / 1G) =7. SAVINGS TO INVESTMENT RATIO 3.21 (IF < 1 PROJECT DOES NOT QUALIFY) 9.19 % 8. ADJUSTED INTERNAL RATE OF RETURN (AIRR):

LIFE CYCLE COST ANALYSIS SUMMARY STUDY: 3642E02B ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID FY95 (92) INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3 PROJECT NO. & TITLE: 94013.04 LES: ECO2 - NAT GAS INFRARED HEAT FISCAL YEAR 95 DISCRETE PORTION NAME: ECO ANALYSIS DATE: 12-05-94 ECONOMIC LIFE 20 YEARS PREPARED BY: G.B. LOFLIN 1. INVESTMENT A. CONSTRUCTION COST \$ 112286. 5614. \$ B. SIOH C. DESIGN COST \$ 5614. D. TOTAL COST (1A+1B+1C) \$ 123514. \$ 0. \$ 0. E. SALVAGE VALUE OF EXISTING EQUIPMENT \$ F. PUBLIC UTILITY COMPANY REBATE 123514. G. TOTAL INVESTMENT (1D - 1E - 1F) 2. ENERGY SAVINGS (+) / COST (-) DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1994 UNIT COST SAVINGS ANNUAL \$ DISCOUNT \$/ MWH(1) MWH/YR(2) SAVINGS(3) FACTOR(4) DISCOUNTED FACTOR(4) SAVINGS(5) FUEL A. ELECT \$ 34.95

E. DIST \$ 19.18

C. RESID \$.00

D. NAT G \$ 13.44

E. COAL \$.00

F. PPG \$.00

M. DEMAND SAVINGS

N. TOTAL

6. \$ 226.

28273.

0. \$ 28273.

0. \$ 0.

0. \$ 0.

0. \$ 0.

0. \$ 0.

14811. 226. 15.08 3410. 18.57 525027. 21.02 0. 18.58 \$ -254325. 16.83 0. 0. 17.38 14.88 0. 274112. 3. NON ENERGY SAVINGS(+) / COST(-) \$ 843. A. ANNUAL RECURRING (+/-) (1) DISCOUNT FACTOR (TABLE A) 14.88 12545. (2) DISCOUNTED SAVING/COST (3A X 3A1) B. NON RECURRING SAVINGS(+) / COSTS(-) SAVINGS(+) YR DISCNT DISCOUNTED COST(-) OC FACTR SAVINGS(+)/ COST(-) ITEM COST(-)(4) (1) (2) (3) d. TOTAL \$ 0. C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)\$ 12545. 4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))\$ 15654. 7.89 YEARS 5. SIMPLE PAYBACK PERIOD (1G/4) 6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) \$ 286657. 7. SAVINGS TO INVESTMENT RATIO (SIR) = (6 / 1G) =2.32 (IF < 1 PROJECT DOES NOT QUALIFY) 7.43 % 8. ADJUSTED INTERNAL RATE OF RETURN (AIRR):

_______ 23-Nov-94 BLDG 3642 Date: INSTALL INFARED HEATING SYSTEM COST ESTIMATE Description: LIMITED EEAP(HGR) Bid Date: Project: 94013.04 Job #: FORT BRAGG, N.C. Location: City indx:Raleigh, NC Sq. footage: Description . _ _ _ _ _ _ Equipment Sub Labor Manhours Matl _______ PAVEMENT REMOVAL, BITUMINOUS, 4" TO 6" THICK 0205541750 30.00 S.Y. 2.50 0.00 4.23 1.73 Unit values 0.00 0.10 \$52 \$75 \$0 \$127 \$0 2.85 Totals SITE REMOVAL, STEEL PIPE, WELDED CONNECTION, 0205543200 1600.00 L.F. UP TO 4"DIAMETER 0.00 3.68 2.61 1.06 0.15 0.00 Unit values \$1,702 \$0 \$5,882 \$0 \$4,180 Totals 240.00 HVAC DEMO, BOILER GAS/OIL STL >150MBH 0207180380 (qty) Ea. 0.00 0.00 268.07 0.00 268.07 12.00 Unit values \$0 \$0 \$0 0.00 \$0 \$0 Totals HVAC DEMO, MECH EQPT HEAVY ITEM 0207183600 1.50 Ton 0.00 314.87 0.00 0.00 314.87 Unit values 14.55 \$0 \$472 \$0 21.82 \$0 \$472 Totals REMOVE PIPE INSULATION UP TO 4" DIAMETER PIPE 0208400600 1400.00 L.F. 0.20 0.00 1.63 0.07 0.00 Unit values \$0 \$2,561 \$2,287 \$274 \$0 Totals 99.40 REMOVE INSULATION FROM PIPE FITTING, UP TO 4" 0208401000 160.00 Ea. DIAMETER PIPE 4.60 5.16 0.20 0.00 0.56 0.00 Unit values \$825 32.00 \$0 \$735 \$90 \$0 Totals TAMPING TRENCH B'FILL, VIBRATING PLATE, ADD 0222541900 15.00 C.Y. 1.99 0.00 0.55 Unit values 0.09 0.00 1.44 \$0 \$0 \$22 \$8 \$30 1.34 Totals TRENCH EXCVTNG 40HP CHNTRNCHR&BKFL 12"W24"D 0222582800 200.00 L.F. 0.39 0.20 0.20 0.00 0.00 0.01 Unit values \$0 \$78 \$39 \$39 2.00 \$0 Totals ASPHALTIC CONCRETE PAVEMENT, PAVING, WEARING 0251040380

Unit values Totals	COURSE, 2" 0.02 0.45	THICK 2.96 \$89	0.27 \$8	0.25 \$7	30.00 0.00 \$0	3.48
0260120200 Unit values Totals	BEDDING, FC BANK 0.16 1.28	3.79	2.79	1.13	8.00 0.00	
0260120500 Unit values Totals	0.09		1.44	0.55 \$4	8.00 0.00 \$0	1.99
0266907800 Unit values Totals		404.00	29.36	4.89	1.00	438.25
0268520150 Unit values Totals	PSI 1-1/4"I	IAM SDR 1	.0,COIL 1.10	OLYETHYLENI 0.00 \$0	0.00	L.F. 1.72 \$363
0268520600 Unit values Totals	GAS SERVICE END, TAR COA 0.11 5.70	T&WRAP 1- 3.40	1/4" DIAM 2.63	40 STEEL PI 0.15 \$8	50.00 0.00	L.F. 6.19 \$309

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Line #	Description								
	Manhours	Matl	Labor	Equipment	Sub	Total			
=======================================	=======	=======	======						
U02 SITEWORK	422	\$825	\$8,220	\$2,221	\$0	\$11,266			
1554510245	HTG CO-RAY	-VAC INFA	-RD UNT	GAS ELEC IGN details)	1.00				
Unit values Totals		0.00 \$0	0.00	50923.00 \$50,923		50923.00 \$50,923			
1562600137	GAS APPLIA TYPE 1-1/4			UBLE DIAPHRAG	GM 1.00	Ea.			
Unit values Totals	0.53		9.14 \$9	0.00 \$0	0.00 \$0	234.91 \$235			
U15 MECHANICAL	1	\$226	\$9	\$50,923	\$0	\$51,158			

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Line #	Description	on				
	Manhours	Matl	Labor	Equipment	Sub	Total
==========	========	=======================================	=======	_ = = = = = = = = = = =		
ESTIMATE TOTAL	423	\$1,051	\$8,229	\$53,144	\$0	\$62,424
SALES TAX MATL MARKUP LABOR MARKUP	0.00% 0.00% 0.00%	\$0 \$0	\$0			
EQUIPT MARKUP SUB MARKUP	0.00% 0.00%			\$0	\$0	
TOTAL BEFORE C CONTINGENCY BOND	ONTINGENC 20.00% 0.00%	\$1,051	\$8,229	\$53,144	\$0	\$62,424 \$12,485 \$0
PROFIT	10.00%					\$6,242
JOB TOTAL						\$81,151

_______ Estimate: BLDG 3642 Date: 23-Nov-94
Description: INSTALL INFARED HEATING SYSTEM COST ESTIMATE
Project: LIMITED EEAP(HGR) Bid Date:

Project: LIMITED EEAP(HGR) Bid Date:
Location: FORT BRAGG, N.C. Job #: 94013.04
Sq. footage: ******* City indx:Raleigh, N.C. City indx:Raleigh, NC

-4						
=======================================	Si	UMMARY				
	Manhours	Matl	Labor	Equipment	Sub	Total
		=========	=======		======	========
U02 SITEWORK U15 MECHANICAL	422	\$825 \$226	\$8,220 \$9	\$2,221 \$50,923	\$0 \$0	\$11,266 \$51,158
TOTAL	423	\$1,051	\$8,229	\$53,144	\$0	\$62,424
SALES TAX MATL MARKUP LABOR MARKUP	0.00% 0.00% 0.00%	\$0 \$0	\$0			
EQUIPT MARKUP SUB MARKUP	0.00%		Ų Ū	\$0	\$0	
TOTAL BEFORE C CONTINGENCY BOND PROFIT	ONTINGENC 20.00% 0.00% 10.00%	\$1,051	\$8,229	\$53,144	\$0	\$62,424 \$12,485 \$0 \$6,242
JOB TOTAL						\$81,151

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LIFE CYCLE COST ANALYSIS SUMMARY

ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP)

INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 94013.04 LES: ECO2 - NAT GAS INFRARED HEAT
FISCAL YEAR 95 DISCRETE PORTION NAME: ECO
                  12-12-94 ECONOMIC LIFE 20 YEARS PREPARED BY: G.B. LOFLIN
ANALYSIS DATE:
1. INVESTMENT
A. CONSTRUCTION COST $
B. SIOH $
C. DESIGN COST $
D. TOTAL COST (1A+1B+1C) $
                                   156150.
                                      7808.
                                      7808.
                                 171766.
E. SALVAGE VALUE OF EXISTING EQUIPMENT $
                                                       0.
F. PUBLIC UTILITY COMPANY REBATE
                                                        Ο.
                                                                  171766.
G. TOTAL INVESTMENT (1D - 1E - 1F)
2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1994
             UNIT COST SAVINGS ANNUAL $ DISCOUNT DISCOUNTED $/ MWH(1) MWH/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5)
                              19.
2401.
0.
3438.
    FUEL
    A. ELECT $ 34.95
B. DIST $ 19.18
C. RESID $ .00
D. NAT G $ 13.44
                                                  664.
                                                               15.08
                                                                              10009.
                                          $ 46042.
$ 0.
$ -19322.
$ 0.
$ 0.
$ 27384.
                                                               18.57
                                                46042.
                                                                             855000.
                                                             21.02
18.58
16.83
17.38
                              -1438.
0.
0.
                                                                         $ -359001.
    E. COAL $ .00
F. PPG $ .00
                                                                             0.
                                                      0.
                                                                                    0.
                                                     0.
                                                               14.88
                                                                                   0.
    M. DEMAND SAVINGS
                                                                              506008.
    N. TOTAL
3. NON ENERGY SAVINGS(+) / COST(-)
                                                                                100.
   A. ANNUAL RECURRING (+/-)
        (1) DISCOUNT FACTOR (TABLE A)
                                                           14.88
        (2) DISCOUNTED SAVING/COST (3A X 3A1)
                                                                                1488.
   B. NON RECURRING SAVINGS(+) / COSTS(-)
                                 SAVINGS(+) YR DISCNT DISCOUNTED

COST(-) OC FACTR SAVINGS(+)/

(1) (2) (3) COST(-)(4)
                  ITEM
                                                                        0.
    d. TOTAL
                                 $ 0.
   C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)$ 1488.
4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))$ 27484.
                                                                             6.25 YEARS
5. SIMPLE PAYBACK PERIOD (1G/4)
                                                                        $ 507496.
6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C)
                                             (SIR) = (6 / 1G) =
                                                                           2.95
7. SAVINGS TO INVESTMENT RATIO
     (IF < 1 PROJECT DOES NOT QUALIFY)
                                                                           8.73 %
8. ADJUSTED INTERNAL RATE OF RETURN (AIRR):
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LIFE CYCLE COST ANALYSIS SUMMARY

ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP)

INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3 PROJECT NO. & TITLE: 94013.04 LES: ECO2 - NAT GAS INFRARED HEAT FISCAL YEAR 95 DISCRETE PORTION NAME: ECO ANALYSIS DATE: 12-12-94 ECONOMIC LIFE 20 YEARS PREPARED BY: G.B. LOFLIN 1. INVESTMENT A. CONSTRUCTION COST \$ 187285. 9364. B. SIOH C. DESIGN COST \$ 9364. D. TOTAL COST (1A+1B+1C) \$ 206013. E. SALVAGE VALUE OF EXISTING EQUIPMENT \$ 0. F. PUBLIC UTILITY COMPANY REBATE Ο. G. TOTAL INVESTMENT (1D - 1E - 1F) 206013. 2. ENERGY SAVINGS (+) / COST (-) DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1994 UNIT COST SAVINGS ANNUAL \$ DISCOUNT DISCOUNTED \$/ MWH(1) MWH/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5) FUEL A. ELECT \$ 34.95 19.

B. DIST \$ 19.18 2401.

C. RESID \$.00 0.

D. NAT G \$ 13.44 -1438. 664. 15.08 10009. \$ 46042. \$ 0. \$ -19322. \$ 0. \$ 46042. 855000. 18.57 21.02 0. \$ -359001. 18.58 16.83 0. E. COAL \$.00 17.38 С. F. PPG \$.00 0. 0. 0. 14.88 0. M. DEMAND SAVINGS \$ 27384. 982. 506008. N. TOTAL 3. NON ENERGY SAVINGS (+) / COST (-) \$ 100. A. ANNUAL RECURRING (+/-) (1) DISCOUNT FACTOR (TABLE A) 14.88 (2) DISCOUNTED SAVING/COST (3A X 3A1) 1488. B. NON RECURRING SAVINGS (+) / COSTS (-) SAVINGS(+) YR COST(-) OC DISCOUNTED SAVINGS(+)/ DISCNT COST(-) FACTR ITEM (3) COST(-)(4)(2) d. TOTAL \$ 0. 0. C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)\$ 1488. 4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))\$ 27484. 7.50 YEARS 5. SIMPLE PAYBACK PERIOD (1G/4) \$ 507496. 6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) (SIR) = (6 / 1G) =2.46 7. SAVINGS TO INVESTMENT RATIO (IF < 1 PROJECT DOES NOT QUALIFY) 7.75 % 8. ADJUSTED INTERNAL RATE OF RETURN (AIRR):

Estimate: BLDG 3807 Date: 23-Nov-94 INSTALL INFARED HEATING SYSTEM COST ESTIMATE Description: LIMITED EEAP(HGR) Bid Date: Project: 94013.04 FORT BRAGG, N.C. Job #: Location: City indx:Raleigh, NC Sq. footage: Description Manhours Matl Labor Equipment Sub 0205541750 PAVEMENT REMOVAL, BITUMINOUS, 4" TO 6" THICK 40.00 S.Y. 1.73 2.50 0.00 4.23 0.00 Unit values 0.10 \$100 \$0 \$169 \$69 \$0 3.80 Totals SITE REMOVAL, STEEL PIPE, WELDED CONNECTION, 0205543200 3000.00 L.F. 1.06 UP TO 4"DIAMETER 0.00 2.61 0.15 0.00 Unit values \$0 \$11,029 \$7,838 \$3,191 \$0 450.00 Totals HVAC DEMO, MECH EQPT HEAVY ITEM 0207183600 3.00 Ton 0.00 0.00 314.87 14.55 0.00 314.87 Unit values \$0 \$0 \$945 \$0 \$945 43.64 Totals REMOVE PIPE INSULATION UP TO 4" DIAMETER PIPE 0208400600 3000.00 L.F. 0.00 1.83 0.20 0.07 0.00 1.63 Unit values \$0 \$0 \$4,902 \$587 \$5,489 Totals 213.00 REMOVE INSULATION FROM PIPE FITTING, UP TO 4" 0208401000 400.00 Ea. DIAMETER PIPE 0.56 5.16 0.00 4.60 0.00 0.20 Unit values \$1,838 \$225 \$0 \$2,063 \$0 80.00 Totals TAMPING TRENCH B'FILL, VIBRATING PLATE, ADD 0222541900 50.00 C.Y. 0.00 1.99 0.55 0.09 0.00 1.44 Unit values \$100 \$72 \$0 4.45 \$0 \$28 Totals TRENCH EXCVTNG 40HP CHNTRNCHR&BKFL 12"W24"D 0222582800 600.00 L.F. 0.00 0.39 0.20 0.00 0.20 0.01 Unit values \$117 \$0 \$234 \$117 6.00 \$0 Totals ASPHALTIC CONCRETE PAVEMENT, PAVING, WEARING 0251040380 40.00 S.Y. COURSE, 2" THICK 0.27 3.48 0.25 0.00 2.96 0.02 Unit values \$0 \$139 \$10 \$118 \$11 0.60 Totals

0260120200	BEDDING, I	FOR PIPE IN	TRENCH SAI	ND, DEAD O	R 10.00	C V
Unit values Totals	0.16	3.79 \$38	2.79 \$28	1.13 \$11	0.00	7.71 \$77
		PLACING IN			10.00	C V
Unit values Totals	0.09 0.89	0.00 \$0	1.44 \$14	0.55 \$6	0.00	1.99
0266907800	CUT IN VA	LVES, W/DUC	K TIP GASK	ET, 4" DIA	METER 1.00	Fa
Unit values Totals	1.56 1.56	404.00 \$404	29.36 \$29	4.89 \$5	0.00	438.25
0268520150	GAS SERVI	CE & DISTRIE	B PIPING, PO	OLYETHYLEN:	E,60-	T. E
Unit values Totals	0.06 36.60	"DIAM SDR 10 0.63 \$382	1.10 \$670	0.00 \$0	0.00	1.72 \$1,052
0268520600	GAS SERVI	CE&DISTRIB I	PIPING, SCH	40 STEEL P	LAIN	т. г
Unit values Totals	0.11 5.70	OAT&WRAP 1-1 3.40 \$170	2.63 \$131	0.15 \$8	0.00	6.19 \$309

\$0 \$98,051

Line #	Description	on				
	Manhours	Matl		Equipment		Total
U02 SITEWORK	848	\$1,112	\$16,664	\$4,288	\$0	\$22,064
1531106180	WTR HTR C			BH 192 GPH	1.00	Ea
Unit values Totals	13.33		226.88	0.00 \$0	0.00	2324.78 \$2,325
1551153320	HTG BR GAS	S CI STD H	TWR GOP	2000 MBH	1 00	П-
Unit values Totals		12487.50 \$12,488		0.00 \$0		13863.88 \$13,864
1554510245	HTG CO-RAY			GAS ELEC IGN	1.00	T.C.
Unit values Totals	0.00 0.00	0.00	0.00	81627.00 \$81,627	0.00	81627.00 \$81,627
1562600137	GAS APPLIATYPE 1-1/4			UBLE DIAPHRA	GM 1.00	Fa
Unit values Totals	0.53		9.14	0.00 \$0	0.00	

U15 MECHANICAL 99 \$14,812 \$1,612 \$81,627

=======================================	========	=======	========			=======
Line #	Descripti	on				
	Manhours	Matl	Labor	Equipment	Sub	Total
	========	=======================================	=======	========	======	=======
ESTIMATE TOTAL	947	\$15,924	\$18,276	\$85,915	\$0	\$120,115
SALES TAX MATL MARKUP	0.00%	\$0 \$0	420, 275	400,000	7 -	, ,
LABOR MARKUP EQUIPT MARKUP SUB MARKUP	0.00% 0.00% 0.00%	7.	\$0	\$0	\$0	
CONTINGENCY	CONTINGENC 20.00% 0.00%	\$15,924	\$18,276	\$85,915	\$0	\$120,115 \$24,023 \$0
BOND PROFIT	10.00%					\$12,012
JOB TOTAL						\$156,150

Estimate: BLDG 3807 Date: 23-Nov-94
Description: INSTALL INFARED HEATING SYSTEM COST ESTIMATE
Project: LIMITED EEAP(HGR) Bid Date:
Location: FORT BRAGG, N.C. Job #: 94013.04
Sq. footage: ******** City indx:Raleigh, NC

	S	UMMARY				
	Manhours	Matl	Labor	Equipment	Sub	Total
==========	=======	=======================================	======			
U02 SITEWORK U15 MECHANICAL	848 99	\$1,112 \$14,812	\$16,664 \$1,612	\$4,288 \$81,627	\$0 \$0	\$22,064 \$98,051
TOTAL	947	\$15,924	\$18,276	\$85,915	\$0	\$120,115
SALES TAX MATL MARKUP LABOR MARKUP	0.00% 0.00% 0.00%	\$0 \$0	\$0			
EQUIPT MARKUP SUB MARKUP	0.00% 0.00%			\$0	\$0	
TOTAL BEFORE CONTINGENCY BOND PROFIT	ONTINGENC 20.00% 0.00% 10.00%	\$15,924	\$18,276	\$85,915	\$0	\$120,115 \$24,023 \$0 \$12,012
JOB TOTAL						\$156,150

LIFE CYCLE COST ANALYSIS SUMMARY

ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP)

INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3

PROJECT NO. & TITLE: 94013.04 LES: ECO2 - NAT GAS INFRARED HEAT FISCAL YEAR 95 DISCRETE PORTION NAME: ECO ANALYSIS DATE: 12-05-94 ECONOMIC LIFE 20 YEARS PREPARED BY: G.B. LOFLIN 1. INVESTMENT A. CONSTRUCTION COST \$ 71897. B. SIOH \$ 3595. C. DESIGN COST \$ 3595. D. TOTAL COST (1A+1B+1C) \$ 79087. 0. 0. E. SALVAGE VALUE OF EXISTING EQUIPMENT \$ E. SALVAGE VALUE OF EXISTING EQUIPMENT \$
F. PUBLIC UTILITY COMPANY REBATE \$ G. TOTAL INVESTMENT (1D - 1E - 1F) 79087. 2. ENERGY SAVINGS (+) / COST (-) DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1994 UNIT COST SAVINGS ANNUAL \$ DISCOUNT DISCOUNTED MWH/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5) \$/ MWH(1) FUEL A. ELECT \$ 34.95 | 15. \$ 507. 15.08
B. DIST \$ 19.18 | 1055. \$ 20227. 18.57
C. RESID \$.00 | 0. \$ 0. 21.02
D. NAT G \$ 13.44 | -614. \$ -8257. 18.58
E. COAL \$.00 | 0. \$ 0. 16.83
F. PPG \$.00 | 0. \$ 0. 17.38
M. DEMAND SAVINGS | \$ 0. 14.88
N. TOTAL | 455. \$ 12477. 507. 15.08 18.57 7642. 375616. 0. -153420. 0. 0. 0. 229838. 3. NON ENERGY SAVINGS (+) / COST (-) 2881. A. ANNUAL RECURRING (+/-)(1) DISCOUNT FACTOR (TABLE A) 14.88 \$ 42872. (2) DISCOUNTED SAVING/COST (3A X 3A1) B. NON RECURRING SAVINGS(+) / COSTS(-) SAVINGS(+) YR COST(-) OC DISCNT FACTR DISCOUNTED AVINGS (... COST(-) SAVINGS(+)/ COST(-)(4) ITEM (2) (3) d. TOTAL 0. C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)\$ 4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))\$ 5.15 YEARS 5. SIMPLE PAYBACK PERIOD (1G/4) \$ 272711. 6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) 7. SAVINGS TO INVESTMENT RATIO (SIR) = (6 / 1G) = 3.45 (IF < 1 PROJECT DOES NOT QUALIFY) 9.58 % 8. ADJUSTED INTERNAL RATE OF RETURN (AIRR):

LIFE CYCLE COST ANALYSIS SUMMARY STUDY: 3954E02B ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID FY95 (92) INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3 PROJECT NO. & TITLE: 94013.04 LES: ECO2 - NAT GAS INFRARED HEAT FISCAL YEAR 95 DISCRETE PORTION NAME: ECO 12-05-94 ECONOMIC LIFE 20 YEARS PREPARED BY: G.B. LOFLIN ANALYSIS DATE: 1. INVESTMENT A. CONSTRUCTION COST \$ 103032. 5152. B. SIOH C. DESIGN COST \$ 5152. D. TOTAL COST (1A+1B+1C) \$ 113336. E. SALVAGE VALUE OF EXISTING EQUIPMENT \$ F. PUBLIC UTILITY COMPANY REBATE \$ Ο. G. TOTAL INVESTMENT (1D - 1E - 1F) 113336. 2. ENERGY SAVINGS (+) / COST (-) DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1994 UNIT COST SAVINGS ANNUAL \$ DISCOUNT DISCOUNTED FACTOR(4) \$/ MWH(1) MWH/YR(2) SAVINGS(3) SAVINGS (5) 507. 7642. 15.08 15. \$ 507. 1055. \$ 20227. 0. \$ 0. -614. \$ -8257. 0. \$ 0. 0. \$ 0. 455. \$ 12477. \$ 375616. \$ 0. \$ -153420. \$ 0. \$ 0. 18.57 21.02 18.58 16.83 E. COAL \$.00 F. PPG \$.00 M. DEMAND SAVINGS 17.38 14.88 N. TOTAL 229838. 3. NON ENERGY SAVINGS (+) / COST (-) A. ANNUAL RECURRING (+/-) \$ 2881. 14.88 (1) DISCOUNT FACTOR (TABLE A) (2) DISCOUNTED SAVING/COST (3A X 3A1) 42872. B. NON RECURRING SAVINGS (+) / COSTS (-) SAVINGS(+) YR DISCNT DISCOUNTED VINGS (... COST (-) OC FACTR SAVINGS(+)/ ITEM (2) COST(-)(4)(1) (3) d. TOTAL Ο. C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)\$ 4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))\$ 7.38 YEARS 5. SIMPLE PAYBACK PERIOD (1G/4) \$ 272711. 6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) 7. SAVINGS TO INVESTMENT RATIO (SIR) = (6 / 1G) =(IF < 1 PROJECT DOES NOT QUALIFY) 7.62 % 8. ADJUSTED INTERNAL RATE OF RETURN (AIRR):

LIFE CYCLE COST ANALYSIS SUMMARY

BLDG 3954 23-Nov-94 Estimate: Date: INSTALL INFARED HEATING SYSTEM COST ESTIMATE Description: LIMITED EEAP(HGR) Bid Date: Project: Location: FORT BRAGG, N.C. Job #: 94013.04 ***** City indx:Raleigh, NC Sq. footage: Description Labor Equipment Manhours Matl _______ PAVEMENT REMOVAL, BITUMINOUS, 4" TO 6" THICK 0205541750 30.00 S.Y. Unit values 0.10 0.00 1.73 2.50 0.00 4.23 Totals 2.85 \$0 \$52 \$75 \$0 \$127 0205543200 SITE REMOVAL, STEEL PIPE, WELDED CONNECTION, UP TO 4"DIAMETER 1600.00 L.F. 0.15 Unit values 0.00 2.61 1.06 0.00 3.68 Totals 240.00 \$0 \$4,180 \$1,702 \$0 \$5,882 0207180380 HVAC DEMO, BOILER GAS/OIL STL >150MBH (qty) Ea. Unit values 12.00 0.00 268.07 0.00 0.00 268.07 0.00 Totals \$0 \$0 \$0 \$0 \$0 HVAC DEMO, MECH EQPT HEAVY ITEM 0207183600 1.50 Ton 314.87 Unit values 14.55 0.00 0.00 0.00 314.87 Totals 21.82 \$0 \$472 \$0 \$0 \$472 REMOVE PIPE INSULATION UP TO 4" DIAMETER PIPE 0208400600 1400.00 L.F. Unit values 0.07 0.00 1.63 0.20 1.83 0.00 Totals 99.40 \$0 \$2,287 \$274 \$0 \$2,561 REMOVE INSULATION FROM PIPE FITTING, UP TO 4" 0208401000 DIAMETER PIPE 160.00 Ea. 0.20 Unit values 0.00 4.60 0.56 5.16 0.00 Totals 32.00 \$0 \$735 \$90 \$825 \$0 0222541900 TAMPING TRENCH B'FILL, VIBRATING PLATE, ADD 15.00 C.Y. Unit values 0.09 0.00 1.44 0.55 1.99 0.00 Totals 1.34 \$0 \$22 \$8 \$0 \$30 0222582800 TRENCH EXCVTNG 40HP CHNTRNCHR&BKFL 12"W24"D 200.00 L.F. Unit values 0.00 0.20 0.20 0.01 0.00 0.39 Totals 2.00 \$0 \$39 \$39 \$0 \$78 0251040380 ASPHALTIC CONCRETE PAVEMENT, PAVING, WEARING

30-Nov-94	MeansData for Lotus	Page 2

Unit values Totals	COURSE, 2" 0.02 0.45	THICK 2.96 \$89	0.27 \$8	0.25 \$7	30.00 £ 0.00 \$0	3.48 \$104
0260120200	BEDDING, F	OR PIPE IN	TRENCH S	AND, DEAD C	R	C.Y.
Unit values Totals	0.16 1.28	3.79 \$30	2.79 \$22	1.13 \$9	0.00 \$0	7.71 \$61
0260120500	BEDDING, P	LACING IN	TRENCH		8.00 (7 V
Unit values Totals		0.00 \$0	1.44 \$12	0.55	0.00	1 99
0266907800	CUT IN VAL	VES, W/DUC	CK TIP GAS	KET, 4" DIA	METER 1.00 H	₹a
Unit values Totals	1.56 1.56	404.00 \$404	29.36 \$29	4.89 \$5	0.00	438.25
0268520150	PST 1-1/4"	OTAM SDR 1	O COTT.		210 00 1	G.F.
Unit values Totals	0.06	0.63	1.10	0.00 \$0	0.00	1.72
0268520600	GAS SERVIC	E&DISTRIB AT&WRAP 1-	PIPING,SC	H40 STEEL P	LAIN 50.00 J	F.
Unit values Totals	0.11	3.40 \$170	2.63	0.15 \$8	0.00	6.19 \$309

*****	=======			========	======	=======	
Line #	Description	n					
	Manhours	Matl	Labor	Equipment	Sub	Total	
U02 SITEWORK	422	\$825	\$8,220	\$2,221	\$0	\$11,266	
1554510245	HTG CO-RAY			AS ELEC IGN	1.00	T.Q	
Unit values Totals	•		0.00	43804.00 \$43,804		43804.00 \$43,804	
1562600137				BLE DIAPHRAG		_	
Unit values Totals	TYPE 1-1/4 0.53 0.53		9.14 \$9	0.00 \$0	1.00 0.00 \$0		

U15 MECHANICAL 1 \$226 \$9 \$43,804 \$0 \$44,039

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Line #	Description	on				
	Manhours	Matl	Labor	Equipment	Sub	Total
=======================================	=========	======	======		=======	=======
ESTIMATE TOTAL	423	\$1,051	\$8,229	\$46,025	\$0	\$55,305
SALES TAX	0.00%	\$0 \$0				
MATL MARKUP LABOR MARKUP	0.00% 0.00%	\$0	\$0			
EQUIPT MARKUP SUB MARKUP	0.00% 0.00%			\$0	\$0	
		41 051	40.000	446.005		
TOTAL BEFORE C CONTINGENCY	ONTINGENC 20.00%	\$1,051	\$8,229	\$46,025	\$0	\$55,305 \$11,061
BOND PROFIT	0.00% 10.00%					\$0 \$5,531
JOB TOTAL						\$71,897

\$71,897

Estimate: BLDG 3954

23-Nov-94 Date:

Description: INSTALL INFARED HEATING SYSTEM COST ESTIMATE

LIMITED EEAP(HGR) Bid Date:

Project: Location:

JOB TOTAL

FORT BRAGG, N.C. Job #:

94013.04

Sq. footage:

City indx:Raleigh, NC

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	Manhours	Matl	Labor	Equipment	Sub	Total
=======================================	=======					
U02 SITEWORK U15 MECHANICAL	422 1	\$825 \$226	\$8,220 \$9	\$2,221 \$43,804	\$0 \$0	\$11,266 \$44,039
TOTAL	423	\$1,051	\$8,229	\$46,025	\$0	\$55,305
SALES TAX MATL MARKUP LABOR MARKUP EQUIPT MARKUP	0.00% 0.00% 0.00% 0.00%	\$0 \$0	\$0	\$0		
SUB MARKUP	0.00%				\$0	
TOTAL BEFORE CONTINGENCY BOND PROFIT	ONTINGENC 20.00% 0.00% 10.00%	\$1,051	\$8,229	\$46,025	\$0	\$55,305 \$11,061 \$0 \$5,531

LIFE CYCLE COST ANALYSIS SUMMARY STUDY: 3962E02A
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID FY95 (92
INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3 PROJECT NO. & TITLE: 94013.04 LES: ECO2 - NAT GAS INFRARED HEAT FISCAL YEAR 95 DISCRETE PORTION NAME: ECO ANALYSIS DATE: 12-13-94 ECONOMIC LIFE 20 YEARS PREPARED BY: G.B. LOFLIN 1. INVESTMENT A. CONSTRUCTION COST \$ 81151.
B. SIOH \$ 4058.
C. DESIGN COST \$ 4058.
D. TOTAL COST (1A+1B+1C) \$ 89267. 0. 0. E. SALVAGE VALUE OF EXISTING EQUIPMENT \$ E. SALVAGE VALUE OF EXISTING EQUIPMENT \$
F. PUBLIC UTILITY COMPANY REBATE \$ G. TOTAL INVESTMENT (1D - 1E - 1F) 89267. 2. ENERGY SAVINGS (+) / COST (-) DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1994 DISCOUNTED UNIT COST SAVINGS ANNUAL \$ DISCOUNT \$/ MWH(1) MWH/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5) FUEL 4264. 515845. 0. 0. 0. ٥. 275827. 3. NON ENERGY SAVINGS (+) / COST (-) \$ 4750. A. ANNUAL RECURRING (+/-) (1) DISCOUNT FACTOR (TABLE A) 14.88 (2) DISCOUNTED SAVING/COST (3A X 3A1) \$ 70684. B. NON RECURRING SAVINGS(+) / COSTS(-) SAVINGS(+) YR DISCNT DISCOUNTED COST(-) OC FACTR SAVINGS(+)/ COST(-) OC SAVINGS(+)/ COST(-)(4) (3) \$ 0. d. TOTAL C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)\$ 70684. 4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))\$ 5. SIMPLE PAYBACK PERIOD (1G/4) 4.54 YEARS 6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) \$ 346511. 7. SAVINGS TO INVESTMENT RATIO (SIR) = (6 / 1G) =3.88 (IF < 1 PROJECT DOES NOT QUALIFY) 8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): 10.23 %

LIFE CYCLE COST ANALYSIS SUMMARY

LCCID FY95 (92)

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LIFE CYCLE COST ANALYSIS SUMMARY

ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP)

INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 94013.04 LES: ECO2 - NAT GAS INFRARED HEAT
FISCAL YEAR 95 DISCRETE PORTION NAME: ECO
ANALYSIS DATE: 12-13-94 ECONOMIC LIFE 20 YEARS PREPARED BY: G.B. LOFLIN
1. INVESTMENT
A. CONSTRUCTION COST $
                               112286.
B. SIOH $ 5614.
C. DESIGN COST $ 5614.
D. TOTAL COST (1A+1B+1C) $ 123514.
                                                0.
0.
E. SALVAGE VALUE OF EXISTING EQUIPMENT $
F. PUBLIC UTILITY COMPANY REBATE $
G. TOTAL INVESTMENT (1D - 1E - 1F)
                                                           123514.
2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1994
             UNIT COST SAVINGS ANNUAL $ DISCOUNT DISCOUNTED
             $/ MWH(1) MWH/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5)
   4264.
                                                                     515845.
                                                                           0.
                                                                 $ -244281.
                                                                     0.
                                                                          0.
                                                                          0.
                                                                     275827.
3. NON ENERGY SAVINGS(+) / COST(-)
                                                                $
   A. ANNUAL RECURRING (+/-)
                                                                      4750.
       (1) DISCOUNT FACTOR (TABLE A)
                                                       14.88
                                                                $ 70684.
       (2) DISCOUNTED SAVING/COST (3A X 3A1)
   B. NON RECURRING SAVINGS(+) / COSTS(-)
                             SAVINGS(+) YR
COST(-) OC
                              AVINGS (...
COST (-)
                                                DISCNT DISCOUNTED FACTR SAVINGS(+)/
                                         OC FACTR
(2) (3)
                                                          COST(-)(4)
   d. TOTAL
                             Ś
                                 0.
   C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)$ 70684.
4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))$ 19664.
5. SIMPLE PAYBACK PERIOD (1G/4)
                                                                   6.28 YEARS
6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C)
                                                                 $ 346511.
7. SAVINGS TO INVESTMENT RATIO (IF < 1 PROJECT DOES NOT QUALIFY)
                                       (SIR) = (6 / 1G) =
                                                                   2.81
8. ADJUSTED INTERNAL RATE OF RETURN (AIRR):
                                                                 8.45 %
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BLDG 3962 Date: 23-Nov-94 Estimate: INSTALL INFARED HEATING SYSTEM COST ESTIMATE Description: LIMITED EEAP(HGR) Bid Date: Project: 94013.04 FORT BRAGG, N.C. Job #: Location: ***** City indx:Raleigh, NC Sq. footage: Description Labor Equipment Sub Manhours ______ 0205541750 PAVEMENT REMOVAL, BITUMINOUS, 4" TO 6" THICK 30.00 S.Y. Unit values 0.10 0.00 1.73 2.50 0.00 4.23 2.85 \$0 \$52 \$75 \$0 \$127 Totals SITE REMOVAL, STEEL PIPE, WELDED CONNECTION, 0205543200 1600.00 L.F. UP TO 4"DIAMETER 0.15 Unit values 0.00 2.61 1.06 0.00 3.68 240.00 \$0 \$4,180 \$1,702 \$0 Totals \$5,882 0207180380 HVAC DEMO, BOILER GAS/OIL STL >150MBH (qty) Ea. 0.00 268.07 0.00 268.07 0.00 Unit values 12.00 0.00 \$0 \$0 \$0 \$0 \$0 Totals HVAC DEMO, MECH EOPT HEAVY ITEM 0207183600 1.50 Ton 0.00 Unit values 0.00 14.55 314.87 0.00 314.87 Totals 21.82 \$0 \$472 \$0 \$0 \$472 REMOVE PIPE INSULATION UP TO 4" DIAMETER PIPE 0208400600 1400.00 L.F. Unit values 0.07 0.00 1.63 0.20 0.00 1.83 99.40 Totals \$0 \$2,287 \$0 \$274 \$2,561 0208401000 REMOVE INSULATION FROM PIPE FITTING, UP TO 4" DIAMETER PIPE 160.00 Ea. 0.56 Unit values 0.20 0.00 4.60 0.00 5.16 Totals 32.00 \$0 \$735 \$90 \$0 \$825 0222541900 TAMPING TRENCH B'FILL, VIBRATING PLATE, ADD 15.00 C.Y. 0.55 0.00 1.99 Unit values 0.09 0.00 1.44 \$8 \$0 \$22 \$0 \$30 Totals 1.34 TRENCH EXCVTNG 40HP CHNTRNCHR&BKFL 12"W24"D 0222582800 200.00 L.F. 0.00 0.39 0.00 0.20 0.20 Unit values 0.01 \$0 \$39 \$39 \$0 \$78 Totals 2.00 251040380 ASPHALTIC CONCRETE PAVEMENT, PAVING, WEARING

30-Nov-94	MeansData for Lotus	Page 2

Unit values Totals	COURSE, 2" 0.02 0.45	2.96	0.27 \$8	0.25 \$7	30.00 0.00 \$0	3.48
0260120200 Unit values Totals	BANK 0.16	3.79	2.79	1.13	8.00 (0.00	
0260120500	BEDDING, P	LACING IN	TRENCH		8.00 (7 V
Unit values Totals	0.09 0.71	0.00 \$0	1.44 \$12	0.55 \$4	0.00	1.99
0266907800	CUT IN VAL	VES, W/DUC	K TIP GASK	ET, 4" DIA		7 -
Unit values Totals	1.56 1.56	404.00 \$404	29.36 \$29	4.89 \$5	1.00 H 0.00 \$0	438.25
0268520150	GAS SERVIC	E & DISTRI	B PIPING, P	OLYETHYLEN	E,60-	. 12
Unit values Totals	PSI 1-1/4": 0.06 12.60	0.63 \$132	1.10 \$231	0.00 \$0	0.00	1.72 \$363
0268520600	GAS SERVICEND, TAR CO	E&DISTRIB AT&WRAP 1-	PIPING, SCH 1/4" DIAM	40 STEEL P	LAIN 50.00 I	L.F.
Unit values Totals	END, TAR CO. 0.11 5.70	3.40 \$170	2.63 \$131	0.15 \$8	0.00 \$0	6.19

Line #	Description	on				
	Manhours	Matl	Labor	Equipment	Sub	Total
	=======					
U02 SITEWORK	422	\$825	\$8,220	\$2,221	\$0	\$11,266
1554510245	HTG CO-RAY			GAS ELEC IGN	1.00	IC
Unit values Totals		0.00 \$0	0.00		0.00	50923.00
1562600137	GAS APPLIA			UBLE DIAPHRAG	M 1.00	Fa
Unit values Totals		225.77 \$226	9.14	0.00 \$0	0.00	234.91
U15 MECHANICAL	1	\$226	\$9	\$50,923	\$0	\$51,158

	=======				=======	========			
Line #	Description								
	Manhours	Matl	Labor	Equipment	Sub	Total			
	=======================================			========					
ESTIMATE TOTAL	423	\$1,051	\$8,229	\$53,144	\$0	\$62,424			
SALES TAX MATL MARKUP LABOR MARKUP	0.00% 0.00% 0.00%	\$0 \$0	\$0						
EQUIPT MARKUP SUB MARKUP	0.00%		4.5	\$0	\$0				
TOTAL BEFORE COCONTINGENCY BOND	ONTINGENC 20.00% 0.00%	\$1,051	\$8,229	\$53,144	\$0	\$62,424 \$12,485 \$0			
PROFIT	10.00%					\$6,242			
JOB TOTAL						\$81,151			

Estimate: BLDG 3962 Date: 23-Nov-94
Description: INSTALL INFARED HEATING SYSTEM COST ESTIMATE
Project: LIMITED EEAP(HGR) Bid Date:
Location: FORT BRAGG, N.C. Job #: 94013.04
Sq. footage: ******* City indx:Raleigh, NC

	St	JMMARY				
	Manhours	Matl	Labor	Equipment	Sub	Total
=======================================		:========			=======================================	
U02 SITEWORK U15 MECHANICAL	422 1	\$825 \$226	\$8,220 \$9	\$2,221 \$50,923	\$0 \$0	\$11,266 \$51,158
TOTAL	423	\$1,051	\$8,229	\$53,144	\$0	\$62,424
SALES TAX MATL MARKUP LABOR MARKUP	0.00% 0.00% 0.00%	\$0 \$0	\$0			
EQUIPT MARKUP SUB MARKUP	0.00% 0.00%			\$0	\$0	
TOTAL BEFORE CO CONTINGENCY BOND PROFIT	ONTINGENC 20.00% 0.00% 10.00%	\$1,051	\$8,229	\$53,144	\$0	\$62,424 \$12,485 \$0 \$6,242
JOB TOTAL						\$81,151

LIFE CYCLE COST ANALYSIS SUMMARY STUDY: 4137E02A
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID FY95 (92
INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3 LCCID FY95 (92) PROJECT NO. & TITLE: 94013.04 LES: ECO2 - NAT GAS INFRARED HEAT FISCAL YEAR 95 DISCRETE PORTION NAME: ECO ANALYSIS DATE: 12-05-94 ECONOMIC LIFE 20 YEARS PREPARED BY: G.B. LOFLIN 1. INVESTMENT A. CONSTRUCTION COST \$ 56824.

B. SIOH \$ 2841.

C. DESIGN COST \$ 2841.

D. TOTAL COST (1A+1B+1C) \$ 62506. E. SALVAGE VALUE OF EXISTING EQUIPMENT \$ 0. F. PUBLIC UTILITY COMPANY REBATE G. TOTAL INVESTMENT (1D - 1E - 1F) 2. ENERGY SAVINGS (+) / COST (-) DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1994 UNIT COST SAVINGS ANNUAL \$ DISCOUNT DISCOUNTED SAVINGS(3) FACTOR(4) SAVINGS(5) \$/ MWH(1) MWH/YR(2) 920. 15.08 13872. 18.57 373169. 21.02 0. 18.58 16.83 17.38 14.88 -143057. 0. 0. 0. 0. 243984. 3. NON ENERGY SAVINGS(+) / COST(-) \$ 1339. A. ANNUAL RECURRING (+/-) (1) DISCOUNT FACTOR (TABLE A) 14.88 \$ 19923. (2) DISCOUNTED SAVING/COST (3A X 3A1) B. NON RECURRING SAVINGS(+) / COSTS(-) SAVINGS(+) YR DISCNT COST(-) OC FACTR DISCOUNTED VINGS (... COST(-) OC (1) (2) ITEM SAVINGS(+)/ (3) COST(-)(4) d. TOTAL C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)\$ 4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))\$ 5. SIMPLE PAYBACK PERIOD (1G/4) 4.27 YEARS 6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) \$ 263907. 7. SAVINGS TO INVESTMENT RATIO (SIR) = (6 / 1G) =4.22 (IF < 1 PROJECT DOES NOT QUALIFY) 8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): 10.69 %

LIFE CYCLE COST ANALYSIS SUMMARY
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP)

STUDY: 4137E02B
LCCID FY95 (92) INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3 PROJECT NO. & TITLE: 94013.04 LES: ECO2 - NAT GAS INFRARED HEAT FISCAL YEAR 95 DISCRETE PORTION NAME: ECO ANALYSIS DATE: 12-05-94 ECONOMIC LIFE 20 YEARS PREPARED BY: G.B. LOFLIN 1. INVESTMENT A. CONSTRUCTION COST \$ 87959. 4398. B. SIOH C. DESIGN COST \$ 4398. D. TOTAL COST (1A+1B+1C) \$ 96755. E. SALVAGE VALUE OF EXISTING EQUIPMENT \$ F. PUBLIC UTILITY COMPANY REBATE \$ 0. G. TOTAL INVESTMENT (1D - 1E - 1F) 96755. 2. ENERGY SAVINGS (+) / COST (-) DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1994 UNIT COST SAVINGS ANNUAL \$ DISCOUNT DISCOUNTED FUEL \$/ MWH(1) MWH/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5) 15.08 18.57 13872. 373169. 0. 21.02 700. 18.58 0. 16.83 0. 17.38 0. 14.88 \$ -143057. 0. 0. 0. 243984. 3. NON ENERGY SAVINGS (+) / COST(-) \$ 1339. A. ANNUAL RECURRING (+/-)(1) DISCOUNT FACTOR (TABLE A) 14.88 (2) DISCOUNTED SAVING/COST (3A X 3A1) \$ 19923. B. NON RECURRING SAVINGS(+) / COSTS(-) SAVINGS(+) YR DISCNT COST(-) OC FACTR DISCOUNTED COST (-) ITEM SAVINGS(+)/ (2) (3) (1) COST(-)(4) d. TOTAL 0. C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)\$ 4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))\$ 5. SIMPLE PAYBACK PERIOD (1G/4) 6.60 YEARS 6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) \$ 263907. 7. SAVINGS TO INVESTMENT RATIO (SIR) = (6 / 1G) =(IF < 1 PROJECT DOES NOT OUALIFY) 8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): 8.30 %

BLDG 4137 23-Nov-94 Date: Estimate: INSTALL INFARED HEATING SYSTEM COST ESTIMATE Description: LIMITED EEAP(HGR) Bid Date: Project: FORT BRAGG, N.C. Job #: 94013.04 Location: ***** City indx:Raleigh, NC Sq. footage: Description Manhours Matl Labor Equipment ______ PAVEMENT REMOVAL, BITUMINOUS, 4" TO 6" THICK 0205541750 20.00 S.Y. Unit values 0.10 0.00 1.73 2.50 0.00 4.23 1.90 \$0 \$35 Totals \$50 \$0 \$85 0205543200 SITE REMOVAL, STEEL PIPE, WELDED CONNECTION, UP TO 4"DIAMETER 1000.00 L.F. 0.15 1.06 Unit values 0.00 2.61 0.00 3.68 Totals 150.00 \$0 \$2,613 \$1,064 \$0 \$3,677 0207180380 HVAC DEMO, BOILER GAS/OIL STL >150MBH (qty) Ea. 268.07 Unit values 12.00 0.00 0.00 0.00 268.07 Totals 0.00 \$0 \$0 \$0 \$0 \$0 HVAC DEMO, MECH EQPT HEAVY ITEM 0207183600 1.00 Ton 0.00 Unit values 14.55 0.00 314.87 0.00 314.87 Totals 14.55 \$0 \$315 \$0 \$0 \$315 0208400600 REMOVE PIPE INSULATION UP TO 4" DIAMETER PIPE 1000.00 L.F. Unit values 0.07 0.00 0.00 1.63 0.20 1.83 Totals 71.00 \$0 \$1,634 \$196 \$0 \$1,830 0208401000 REMOVE INSULATION FROM PIPE FITTING, UP TO 4" DIAMETER PIPE 125.00 Ea. Unit values 0.20 0.00 4.60 0.56 0.00 5.16 Totals 25.00 \$0 \$574 \$644 \$70 \$0 0222541900 TAMPING TRENCH B'FILL, VIBRATING PLATE, ADD 15.00 C.Y. Unit values 0.09 0.00 1.44 0.55 0.00 1.99 Totals 1.34 \$0 \$22 \$8 \$0 \$30 TRENCH EXCVTNG 40HP CHNTRNCHR&BKFL 12"W24"D 0222582800 150.00 L.F. 0.20 0.00 0.39 Unit values 0.00 0.20 0.01 Totals \$29 \$29 1.50 \$0 \$0 \$58 ASPHALTIC CONCRETE PAVEMENT, PAVING, WEARING 0251040380

30-Nov-94		MeansDa	ta for Lot	us		Page
Unit values Totals	COURSE, 2" 0.02 0.30	2.96	0.27 \$5	0.25 \$5		Y. 3.48 \$69
0260120200	BEDDING, FO	R PIPE IN	TRENCH SA	ND, DEAD C	PR 2.50 C.	v
Unit values Totals	0.16	3.79 \$9	2.79 \$7	1.13 \$3		
0260120500	BEDDING, PL	ACING IN	TRENCH			
Unit values Totals	0.09 0.22	0.00	1.44 \$4	0.55 \$1	2.50 C. 0.00 \$0	Y. 1.99 \$5
0266907800	CUT IN VALV	ES, W/DUC	K TIP GASK	ET, 4" DIA		
Unit values Totals	1.56 1.56	404.00 \$404	29.36 \$29	4.89 \$5	1.00 Ea 0.00 \$0	438.25
0268520150	GAS SERVICE	& DISTRI	B PIPING, PO	OLYETHYLEN	E,60-	_
Unit values Totals	PSI 1-1/4"D 0.06 9.60	0.63	1.10 \$176	0.00	0.00	1.72

GAS SERVICE&DISTRIB PIPING,SCH40 STEEL PLAIN END,TAR COAT&WRAP 1-1/4" DIAM 50. 0.11 3.40 2.63 0.15 0. 5.70 \$170 \$131 \$8

0268520600

Unit values Totals 50.00 L.F.

0.00

\$0

6.19

\$309

2

Line #	Descriptio	n				
	Manhours	Matl	Labor	Equipment	Sub	Total
U02 SITEWORK	284	\$742	\$5,574	\$1,439	\$0	\$7,755
1554510245 Unit values Totals	(See Attac	hed Estim	ate for 0.00	GAS ELEC IGN details) 35721.00 \$35,721		LS 35721.00 \$35,721
1562600137	GAS APPLIA TYPE 1-1/4			UBLE DIAPHRAC	3M 1.00	Ea
Unit values Totals		225.77		0.00 \$0	0.00	234.91 \$235
U15 MECHANICAL	1	\$226	\$9	\$35.721	\$0	\$35.956

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Line #	Description	on				
	Manhours	Matl	Labor	Equipment	Sub	Total
=======================================	========	=======				
ESTIMATE TOTAL	285	\$968	\$5,583	\$37,160	\$0	\$43,711
SALES TAX	0.00%	\$0 \$0				
MATL MARKUP LABOR MARKUP	0.00% 0.00%	ŞU	\$0			
EQUIPT MARKUP	0.00%			\$0	¢ o	
SUB MARKUP	0.00%				\$0	
TOTAL BEFORE C	ONTINGENC 20.00%	\$968	\$5,583	\$37,160	\$0	\$43,711 \$8,742
BOND	0.00%					\$0
PROFIT	10.00%					\$4,371
JOB TOTAL						\$56,824

\$56,824

Estimate: BLDG 4137

Date: 23-Nov-94

Location:

JOB TOTAL

Description: INSTALL INFARED HEATING SYSTEM COST ESTIMATE Project: LIMITED EEAP(HGR) Bid Date: FORT BRAGG, N.C. Job #:

94013.04

Sq. footage:

City indx:Raleigh, NC *****

SUMMARY								
	Manhours	Matl	Labor	Equipment	Sub	Total		
		. = = = = = =						
U02 SITEWORK U15 MECHANICAL	284 1	\$742 \$226	\$5,574 \$9	\$1,439 \$35,721	\$0 \$0	\$7,755 \$35,956		
TOTAL	285	\$968	\$5,583	\$37,160	\$0	\$43,711		
SALES TAX MATL MARKUP LABOR MARKUP EOUIPT MARKUP	0.00% 0.00% 0.00% 0.00%	\$0 \$0	\$0	\$0				
SUB MARKUP	0.00%			7 -	\$0			
TOTAL BEFORE CONTINGENCY BOND PROFIT	ONTINGENC 20.00% 0.00% 10.00%	\$968	\$5,583	\$37,160	\$0	\$43,711 \$8,742 \$0 \$4,371		

LIFE CYCLE COST ANALYSIS SUMMARY STUDY: 4242E02A ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID FY95 (92) INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 94013.04 LES: ECO2 - NAT GAS INFRARED HEAT FISCAL YEAR 95 DISCRETE PORTION NAME: ECO ANALYSIS DATE: 12-12-94 ECONOMIC LIFE 20 YEARS PREPARED BY: G.B. LOFLIN 1. INVESTMENT A. CONSTRUCTION COST \$ 43932. B. SIOH \$ 2197. C. DESIGN COST \$ 2197. D. TOTAL COST (1A+1B+1C) \$ 48326. 0. 0. E. SALVAGE VALUE OF EXISTING EQUIPMENT \$
F. PUBLIC UTILITY COMPANY REBATE \$ E. SALVAGE VALUE OF EXISTING EQUIPMENT \$ G. TOTAL INVESTMENT (1D - 1E - 1F) 48326. 2. ENERGY SAVINGS (+) / COST (-) DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1994 UNIT COST SAVINGS ANNUAL \$ DISCOUNTED FUEL \$/ MWH(1) MWH/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5) 9097. 242828. 0. -92907. 0. 0. 0. 159018. 3. NON ENERGY SAVINGS(+) / COST(-) 14.88 \$ 50900. \$ A. ANNUAL RECURRING (+/-) (1) DISCOUNT FACTOR (TABLE A) (2) DISCOUNTED SAVING/COST (3A X 3A1) B. NON RECURRING SAVINGS(+) / COSTS(-) SAVINGS(+) YR DISCNT DISCOUNTED

COST(-) OC FACTR SAVINGS(+)/

(1) (2) (3) COST(-)(4) d. TOTAL 0. Ο. C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)\$ 50900. 4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))\$ 5. SIMPLE PAYBACK PERIOD (1G/4) 3.99 YEARS 6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) \$ 209918. 7. SAVINGS TO INVESTMENT RATIO (SIR) = (6 / 1G) = (IF < 1 PROJECT DOES NOT QUALIFY) 4.34 8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): 10.85 %

LIFE CYCLE COST ANALYSIS SUMMARY

LIFE CYCLE COST ANALYSIS SUMMARY
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP)

STUDY: 4242E02B
LCCID FY95 (92) INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 94013.04 LES: ECO2 - NAT GAS INFRARED HEAT FISCAL YEAR 95 DISCRETE PORTION NAME: ECO
ANALYSIS DATE: 12-12-94 ECONOMIC LIFE 20 YEARS PREPARED BY: G.B. LOFLIN 1. INVESTMENT A. CONSTRUCTION COST \$ 75067. B. SIOH \$ 3753. C. DESIGN COST \$ 3753. D. TOTAL COST (1A+1B+1C) \$ 82573. F. PUBLIC UTILITY COMPANY REBATE \$
G. TOTAL INVESTMENT (1D - 1E - 1F) E. SALVAGE VALUE OF EXISTING EQUIPMENT \$ 0. 0. 2. ENERGY SAVINGS (+) / COST (-) DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1994 UNIT COST SAVINGS ANNUAL \$ DISCOUNT DISCOUNTED FUEL \$/ MWH(1) MWH/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5) 9097. 242828. 3. NON ENERGY SAVINGS(+) / COST(-) \$ 3421. 14.88 \$ 50900. A. ANNUAL RECURRING (+/-) (1) DISCOUNT FACTOR (TABLE A) (2) DISCOUNTED SAVING/COST (3A X 3A1) B. NON RECURRING SAVINGS(+) / COSTS(-) SAVINGS(+) YR DISCNT DISCOUNTED
COST(-) OC FACTR SAVINGS(+)/
(1) (2) (3) COST(-)(4) ITEM d. TOTAL \$ 0. C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)\$ 50900. 4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))\$ 5. SIMPLE PAYBACK PERIOD (1G/4) 6.82 YEARS 6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) \$ 209918. 7. SAVINGS TO INVESTMENT RATIO (SIR) = (6 / 1G) = (IF < 1 PROJECT DOES NOT QUALIFY) 2.54 7.92 % 8. ADJUSTED INTERNAL RATE OF RETURN (AIRR):

Estimate: BLDG 4242 Date: 23-Nov-94 INSTALL INFARED HEATING SYSTEM COST ESTIMATE Description: LIMITED EEAP(HGR) Bid Date: Project: FORT BRAGG, N.C. Job #: 94013.04 Location: City indx:Raleigh, NC Sq. footage: 6000.00 Description Line # _____ Manhours Matl Labor Equipment Sub ______ 0205541750 PAVEMENT REMOVAL, BITUMINOUS, 4" TO 6" THICK 20.00 S.Y. 1.73 2.50 Unit values 0.10 0.00 0.00 4.23 Totals 1.90 \$0 \$35 \$50 \$0 \$85 SITE REMOVAL, STEEL PIPE, WELDED CONNECTION, 0205543200 UP TO 4"DIAMETER 500.00 L.F. 0.15 Unit values 0.00 2.61 1.06 0.00 3.68 Totals 75.00 \$0 \$1,306 \$532 \$0 \$1,838 0207180380 HVAC DEMO, BOILER GAS/OIL STL >150MBH 1.00 Ea. 268.07 Unit values 12.00 0.00 0.00 0.00 268.07 Totals 12.00 \$0 \$268 \$0 \$0 \$268 0207183600 HVAC DEMO, MECH EOPT HEAVY ITEM 0.50 Ton Unit values 14.55 0.00 314.87 0.00 0.00 314.87 Totals 7.27 \$0 \$0 \$157 \$0 \$157 0208400600 REMOVE PIPE INSULATION UP TO 4" DIAMETER PIPE 500.00 L.F. Unit values 0.07 0.00 1.63 0.20 0.00 1.83 Totals 35.50 \$817 \$0 \$98 \$0 \$915 REMOVE INSULATION FROM PIPE FITTING, UP TO 4" 0208401000 DIAMETER PIPE 75.00 Ea. Unit values 0.20 0.00 4.60 0.56 0.00 5.16 Totals 15.00 \$0 \$345 \$42 \$387 \$0 0222541900 TAMPING TRENCH B'FILL, VIBRATING PLATE, ADD 15.00 C.Y. Unit values 0.09 0.00 1.44 0.55 0.00 1.99 Totals 1.34 \$0 \$22 \$8 \$0 \$30 0222582800 TRENCH EXCVTNG 40HP CHNTRNCHR&BKFL 12"W24"D 150.00 L.F. Unit values 0.01 0.00 0.20 0.20 0.00 0.39 Totals 1.50 \$0 . \$29 \$29 \$0 \$58 0251040380 ASPHALTIC CONCRETE PAVEMENT, PAVING, WEARING

09-Dec-94		MeansDat	ta for Lotus	5		Page 2
Unit values Totals	COURSE, 2" 5 0.02 0.30	THICK 2.96 \$59	0.27 \$5	0.25 \$5	20.00 S. 0.00 \$0	
0260120200 Unit values Totals	BANK 0.16	3.79		1.13	2.50 C.	7.71
0260120500 Unit values Totals	0.09 0.22	0.00		0.55 \$1		.Y. 1.99 \$5
0266907800 Unit values Totals	1.56	104.00		4.89	1.00 Ea 0.00	438.25
0268520150 Unit values Totals	PSI 1-1/4"DI 0.06	CAM SDR 10 0.63	B PIPING, POI D, COIL 1.10 \$176	0.00	160.00 L. 0.00	F. 1.72 \$276
0268520600 Unit values Totals	END, TAR COAT	7&WRAP 1-1 3.40	PIPING, SCH40 2.4" DIAM 2.63 \$131		50.00 L.	6.19

Line #	Descripti	on				
	Manhours	Matl	Labor	Equipment	Sub	Total
		=======			=====	=======
U02 SITEWORK	168	\$742	\$3,331	\$781	\$0	\$4,854
1551153320	HTG BR GA	S CI STD I	HTWR GOP 2	2000 MBH		
Unit values Totals	84.21 84.21			0.00 \$0		Ea. 13863.88 \$13,864
1554510245	HTG CO-RA	Y-VAC_INF	A-RD UNT (AS ELEC IGN		
Unit values Totals		0.00	0.00	details) 14841.00 \$14,841	0.00	LS 14841.00 \$14,841
1562600137	GAS APPLI	ANCE REGUI	LATORS DOU	JBLE DIAPHRAG		•
Unit values Totals				0.00 \$0	1.00 0.00 \$0	
U15 MECHANICAL	85	\$12,714	\$1,385	\$14,841	\$0	\$28,940

=======================================		=========		=======================================	=======	
Line #	Descripti	.on				
	Manhours	Matl	Labor	Equipment	Sub	Total
=======================================					======	
ESTIMATE TOTAL	253	\$13,456	\$4,716	\$15,622	\$0	\$33,794
SALES TAX MATL MARKUP	0.00% 0.00%	\$0 \$0				
LABOR MARKUP EQUIPT MARKUP	0.00%		\$0	\$0		
SUB MARKUP	0.00%				\$0	
TOTAL BEFORE C CONTINGENCY BOND	ONTINGENC 20.00% 0.00%	\$13,456	\$4,716	\$15,622	\$0	\$33,794 \$6,759 \$0
PROFIT	10.00%					\$3,379
JOB TOTAL						\$43,932

JOB TOTAL

\$43,932

Estimate: BLDG 4242 Date: 23-Nov-94

Description: INSTALL INFARED HEATING SYSTEM COST ESTIMATE Project: LIMITED EEAP(HGR) Bid Date:

FORT BRAGG, N.C. Job #: 94013.04 Location: Sq. footage: 6000.00

Sq. footage: 6000.00 City indx:Raleigh, NC

	S	UMMARY				
	Manhours	Matl	Labor	Equipment	Sub	Total
=======================================			=======		=======	=======
U02 SITEWORK U15 MECHANICAL	168 85	\$742 \$12,714	\$3,331 \$1,385	\$781 \$14,841	\$0 \$0	\$4,854 \$28,940
TOTAL	253	\$13,456	\$4,716	\$15,622	\$0	\$33,794
SALES TAX MATL MARKUP LABOR MARKUP EQUIPT MARKUP	0.00% 0.00% 0.00% 0.00%	\$0 \$0	\$0	\$0		
SUB MARKUP	0.00%			ŞU	\$0	
TOTAL BEFORE CONTINGENCY BOND PROFIT	ONTINGENC 20.00% 0.00% 10.00%	\$13,456	\$4,716	\$15,622	\$0	\$33,794 \$6,759 \$0 \$3,379

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LIFE CYCLE COST ANALYSIS SUMMARY

ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP)

INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3

PROJECT NO. 5 TITLE 200012 200
PROJECT NO. & TITLE: 94013.04 LES: ECO2 - NAT GAS INFRARED HEAT
FISCAL YEAR 95 DISCRETE PORTION NAME: ECO
ANALYSIS DATE: 12-12-94 ECONOMIC LIFE 20 YEARS PREPARED BY: G.B. LOFLIN
1. INVESTMENT
                                  174610.
A. CONSTRUCTION COST $
B. SIOH $ 8731.
C. DESIGN COST $ 8731.
D. TOTAL COST (1A+1B+1C) $ 192072.
                                                       0.
0.
E. SALVAGE VALUE OF EXISTING EQUIPMENT $
F. PUBLIC UTILITY COMPANY REBATE
G. TOTAL INVESTMENT (1D - 1E - 1F)
                                                                   192072.
2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1994
               UNIT COST SAVINGS ANNUAL $ DISCOUNTED
               $/ MWH(1) MWH/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5)
    A. ELECT $ 34.95 30. $ 1062. 15.08
B. DIST $ 19.18 3588. $ 68822. 18.57
C. RESID $ .00 0. $ 0. 21.02
D. NAT G $ 13.44 -2297. $ -30872. 18.58
E. COAL $ .00 0. $ 0. 16.83
F. PPG $ .00 0. $ 0. 17.38
M. DEMAND SAVINGS $ 0. 17.38
N. TOTAL 1322. $ 39013.
                                                                                 16022.
                                                                              1278033.
                                                                               0.
                                                                              -573603.
                                                                                     0.
                                                                                     0.
                                                                                     0.
                                                                               720452.
3. NON ENERGY SAVINGS(+) / COST(-)
   A. ANNUAL RECURRING (+/-)
                                                                                1954.
                                                               14.88
        (1) DISCOUNT FACTOR (TABLE A)
                                                                          $ 29069.
        (2) DISCOUNTED SAVING/COST (3A X 3A1)
   B. NON RECURRING SAVINGS(+) / COSTS(-)
                                 SAVINGS(+) YR DISCNT
COST(-) OC FACTR
(1) (2) (3)
                                                                 DISCOUNTED
                                                                  SAVINGS(+)/
COST(-)(4)
    d. TOTAL
                                      0.
   C. TOTAL NON ENERGY DISCOUNTED SAVINGS (+) / COST (-) (3A2+3Bd4)$ 29069.
4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))$
5. SIMPLE PAYBACK PERIOD (1G/4)
                                                                             4.69 YEARS
                                                                          $ 749520.
6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C)
7. SAVINGS TO INVESTMENT RATIO
                                             (SIR) = (6 / 1G) =
                                                                             3.90
    (IF < 1 PROJECT DOES NOT QUALIFY)
                                                                      10.26 %
8. ADJUSTED INTERNAL RATE OF RETURN (AIRR):
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ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID FY95 (92)
INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 94013.04 LES: ECO2 - NAT GAS INFRARED HEAT
FISCAL YEAR 95 DISCRETE PORTION NAME: ECO
ANALYSIS DATE: 12-12-94 ECONOMIC LIFE 20 YEARS PREPARED BY C. D. CONOMIC LIFE YEARS PREPARED BY C. D. C. D. CONOMIC LIFE YEARS PREPARED BY C. D. C 12-12-94 ECONOMIC LIFE 20 YEARS PREPARED BY: G.B. LOFLIN 1. INVESTMENT A. CONSTRUCTION COST \$ 205745. 10287. B. SIOH \$ 10287. C. DESIGN COST \$ 10287. D. TOTAL COST (1A+1B+1C) \$ 226319. 0. 0. E. SALVAGE VALUE OF EXISTING EQUIPMENT \$ E. SALVAGE VALUE OF EXISTING EQUIPMENT \$
F. PUBLIC UTILITY COMPANY REBATE \$ G. TOTAL INVESTMENT (1D - 1E - 1F) 226319. 2. ENERGY SAVINGS (+) / COST (-) DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1994 UNIT COST SAVINGS ANNUAL \$ DISCOUNTED \$/ MWH(1) MWH/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5) FUEL A. ELECT \$ 34.95 30. \$ 1062. 15.08
B. DIST \$ 19.18 3588. \$ 68822. 18.57
C. RESID \$.00 0. \$ 0. 21.02
D. NAT G \$ 13.44 -2297. \$ -30872. 18.58
E. COAL \$.00 0. \$ 0. 16.83
F. PPG \$.00 0. \$ 0. 17.38
M. DEMAND SAVINGS \$ 0. 17.38
N. TOTAL 1322. \$ 39013. 16022. 1278033. 0. -573603. 0. 0. 0. 720452. 3. NON ENERGY SAVINGS(+) / COST(-) A. ANNUAL RECURRING (+/-) \$ 1954. 14.88 (1) DISCOUNT FACTOR (TABLE A) (2) DISCOUNTED SAVING/COST (3A X 3A1) \$ 29069. B. NON RECURRING SAVINGS(+) / COSTS(-) SAVINGS(+) YR DISCNT COST(-) OC FACTR (1) (2) (3) DISCOUNTED ITEM SAVINGS(+)/ COST(-)(4) d. TOTAL 0. C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)\$ 29069. 4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))\$ 40966. 5. SIMPLE PAYBACK PERIOD (1G/4) 5.52 YEARS 6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) \$ 749520. 7. SAVINGS TO INVESTMENT RATIO (SIR) = (6 / 1G) =3.31 (IF < 1 PROJECT DOES NOT QUALIFY) 8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): 9.36 %

______ Estimate: BLDG 7937 23-Nov-94 Date: INSTALL INFARED HEATING SYSTEM COST ESTIMATE Description: LIMITED EEAP(HGR) Bid Date: Project: FORT BRAGG, N.C. Job #: 94013.04 Location: ***** City indx:Raleigh, NC Sq. footage: Description Line # _____ Manhours Matl Labor Equipment Sub _______ 0205541750 PAVEMENT REMOVAL, BITUMINOUS, 4" TO 6" THICK 40.00 S.Y. 1.73 Unit values 2.50 0.10 0.00 0.00 4.23 3.80 \$0 \$69 \$100 \$0 \$169 Totals 0205543200 SITE REMOVAL, STEEL PIPE, WELDED CONNECTION, UP TO 4"DIAMETER 3000.00 L.F. 2.61 1.06 Unit values 0.15 0.00 0.00 3.68 \$7,838 Totals 450.00 \$0 \$3,191 \$0 \$11,029 HVAC DEMO, MECH EQPT HEAVY ITEM 0207183600 3.00 Ton 0.00 0.00 Unit values 14.55 314.87 0.00 314.87 43.64 \$0 \$945 \$0 Totals \$0 \$945 REMOVE PIPE INSULATION UP TO 4" DIAMETER PIPE 0208400600 3000.00 L.F. 0.00 0.20 0.07 1.63 1.83 Unit values 0.00 213.00 \$0 \$4,902 Totals \$587 \$0 \$5,489 0208401000 REMOVE INSULATION FROM PIPE FITTING, UP TO 4" DIAMETER PIPE 400.00 Ea. 0.00 4.60 0.56 Unit values 0.20 0.00 5.16 Totals 80.00 \$0 \$1,838 \$225 \$0 \$2,063 TAMPING TRENCH B'FILL, VIBRATING PLATE, ADD 0222541900 25.00 C.Y. Unit values 0.09 0.00 1.44 0.55 0.00 1.99 Totals 2.23 \$0 \$36 \$14 \$0 \$50 0222582800 TRENCH EXCVTNG 40HP CHNTRNCHR&BKFL 12"W24"D 300.00 L.F. Unit values 0.01 0.00 0.20 0.20 0.39 0.00 Totals 3.00 \$0 \$59 \$59 \$0 \$118 0251040380 ASPHALTIC CONCRETE PAVEMENT, PAVING, WEARING COURSE, 2" THICK 40.00 S.Y. 2.96 0.27 0.25 0.00 3.48 Unit values 0.02 Totals \$11 \$0 \$139 0.60 \$118 \$10

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0260120200	DANIE			ND, DEAD OR	5 00	C.Y.
Unit values Totals	0.16	3.79 \$19	2.79 \$14	1.13 \$6	0.00	7.71 \$39
0260120500	BEDDING,	PLACING IN	TRENCH		F 00	~ · ·
Unit values Totals	0.09 0.45	0.00 \$0	1.44 \$7	0.55 \$3	0.00 \$0	C.Y. 1.99 \$10
0266907800	CUT IN VA	LVES, W/DUC	K TIP GASK	ET, 4" DIAME		
Unit values Totals	1.56 1.56	404.00 \$404	29.36 \$29	4.89 \$5	1.00 0.00 \$0	438.25
0268520150	GAS SERVIO	CE & DISTRI	B PIPING, PO	OLYETHYLENE,	60-	
77	PSI 1-1/4'	'DIAM SDR 1	0,COIL	0.00	10.00	L.F.
Unit values Totals	18.60	0.63 \$194	\$340	0.00 \$0	\$0	1.72 \$534
0268520600	GAS SERVIO	CE&DISTRIB	PIPING, SCH	40 STEEL PLA	IN	
Unit values Totals	0.11 5.70	3.40 \$170	2.63 \$131	0.15 \$8	0.00	6.19 \$309

Line #	Description					
	Manhours	Matl	Labor	Equipment	Sub	Total
	=======	=======			:	========
U02 SITEWORK	824	\$905	\$16,219	\$4,208	\$0	\$21,332
1531106180	WTR HTR CI			BH 192 GPH	1.00	Fa
Unit values Totals	13.33		226.88	0.00 \$0	0.00	2324.78 \$2,325
1551153320	HTG BR GAS	S CI STD H	TWR GOP 2	2000 MBH		
Unit values Totals		12487.50 \$12,488		0.00 \$0		Ea. 13863.88 \$13,864
1554510245 Unit values Totals	(See Attac	ched Estim 0.00	nate for o	GAS ELEC IGN letails) 96559.00 \$96,559		LS 96559.00 \$96,559
1562600137	GAS APPLIATYPE 1-1/4	3M 1.00	Ea.			
Unit values Totals		225.77 \$226				234.91 \$235
U15 MECHANICAL	99	\$14,812	\$1,612	\$96,559	\$0	\$112,983

Line #	Description						
	Manhours	Matl	Labor	Equipment	Sub	Total	
		=======	======			========	
ESTIMATE TOTAL	923	\$15,717	\$17,831	\$100,767	\$0	\$134,315	
SALES TAX MATL MARKUP LABOR MARKUP	0.00% 0.00% 0.00%	\$0 \$0	\$0				
EQUIPT MARKUP SUB MARKUP	0.00% 0.00%			\$0	\$0		
TOTAL BEFORE CONTINGENCY BOND	ONTINGENC 20.00% 0.00%	\$15,717	\$17,831	\$100,767	\$0	\$134,315 \$26,863 \$0	
PROFIT	10.00%					\$13,432	
JOB TOTAL						\$174,610	

Estimate: BLDG 7937 Date: 23-Nov-94
Description: INSTALL INFARED HEATING SYSTEM COST ESTIMATE
Project: LIMITED EEAP(HGR) Bid Date:
Location: FORT BRAGG, N.C. Job #: 94013.04
Sq. footage: ******* City indx:Raleigh, NC

SUMMARY

56.1111.1						
	Manhours	Matl	Labor	Equipment	Sub	Total
===========	=======	=======================================			=========	=======
U02 SITEWORK U15 MECHANICAL	824 99	\$905 \$14,812	\$16,219 \$1,612	\$4,208 \$96,559	\$0 \$0	\$21,332 \$112,983
TOTAL	923	\$15,717	\$17,831	\$100,767	\$0	\$134,315
SALES TAX MATL MARKUP LABOR MARKUP	0.00% 0.00% 0.00%	\$0 \$0	\$0			
EQUIPT MARKUP SUB MARKUP	0.00% 0.00%			\$0	\$0	
TOTAL BEFORE COCONTINGENCY BOND PROFIT	ONTINGENC 20.00% 0.00% 10.00%	\$15,717	\$17,831	\$100,767	\$0	\$134,315 \$26,863 \$0 \$13,432
JOB TOTAL						\$174,610

LIFE CYCLE COST ANALYSIS SUMMARY

ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP)

INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3 PROJECT NO. & TITLE: 94013.04 LES: ECO2 - NAT GAS INFRARED HEAT FISCAL YEAR 95 DISCRETE PORTION NAME: ECO ANALYSIS DATE: 12-12-94 ECONOMIC LIFE 20 YEARS PREPARED BY: G.B. LOFLIN 1. INVESTMENT A. CONSTRUCTION COST \$ 173113.

B. SIOH \$ 8656.

C. DESIGN COST \$ 8656.

D. TOTAL COST (1A+1B+1C) \$ 190425. E. SALVAGE VALUE OF EXISTING EQUIPMENT \$
F. PUBLIC UTILITY COMPANY REBATE \$ 0. 0. G. TOTAL INVESTMENT (1D - 1E - 1F) 190425. 2. ENERGY SAVINGS (+) / COST (-) DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1994 UNIT COST SAVINGS ANNUAL \$ DISCOUNT DISCOUNTED \$/ MWH(1) MWH/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5) FUEL 27385. 1121078. 0. 0. 0. 0. 743278. 3. NON ENERGY SAVINGS(+) / COST(-) A. ANNUAL RECURRING (+/-) (1) DISCOUNT FACTOR (TABLE A) 6254. 14.88 \$ 93063. (2) DISCOUNTED SAVING/COST (3A X 3A1) B. NON RECURRING SAVINGS(+) / COSTS(-) SAVINGS(+) YR DISCNT DISCOUNTED

COST(-) OC FACTR SAVINGS(+)/

(1) (2) (3) COST(-)(4) ITEM d. TOTAL \$ 0. C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)\$ 93063. 4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))\$ 46633. 5. SIMPLE PAYBACK PERIOD (1G/4) 4.08 YEARS 6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) \$ 836341. 7. SAVINGS TO INVESTMENT RATIO (SIR) = (6 / 1G) = 4.39 10.91 % 8. ADJUSTED INTERNAL RATE OF RETURN (AIRR):

LIFE CYCLE COST ANALYSIS SUMMARY STUDY: 8944E02B ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID FY95 (92) INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3 PROJECT NO. & TITLE: 94013.04 LES: ECO2 - NAT GAS INFRARED HEAT FISCAL YEAR 95 DISCRETE PORTION NAME: ECO ANALYSIS DATE: 12-12-94 ECONOMIC LIFE 20 YEARS PREPARED BY: G.B. LOFLIN 1. INVESTMENT A. CONSTRUCTION COST \$ 204248.

B. SIOH \$ 10212.

C. DESIGN COST \$ 10212.

D. TOTAL COST (1A+1B+1C) \$ 224672. E. SALVAGE VALUE OF EXISTING EQUIPMENT \$
F. PUBLIC UTILITY COMPANY REBATE \$
G. TOTAL INVESTMENT (1D - 1E - 1F) 0. 0. 224672. 2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1994 UNIT COST SAVINGS ANNUAL \$ DISCOUNT DISCOUNTED \$/MWH(1) MWH/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5) FUEL 27385. 1121078. 0. 0. \$ 0. \$ 743278. 3. NON ENERGY SAVINGS (+) / COST(-) NNUAL RECURRING (+/-) \$ 6254. (1) DISCOUNT FACTOR (TABLE A) 14.88 (2) DISCOUNTED SAVING/COST (3A X 3A1) \$ 93063. (1) DISCOUNT FACTOR (TABLE A) A. ANNUAL RECURRING (+/-) B. NON RECURRING SAVINGS(+) / COSTS(-) SAVINGS(+) YR DISCNT DISCOUNTED

COST(-) OC FACTR SAVINGS(+)/

(1) (2) (3) COST(-)(4) d. TOTAL \$ 0. 0. C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)\$ 93063. 4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))\$ 46633. 5. SIMPLE PAYBACK PERIOD (1G/4) 4.82 YEARS 6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) \$ 836341. 7. SAVINGS TO INVESTMENT RATIO (SIR) = (6 / 1G) = 3.72 (IF < 1 PROJECT DOES NOT QUALIFY) 10.00 % 8. ADJUSTED INTERNAL RATE OF RETURN (AIRR):

LIFE CYCLE COST ANALYSIS SUMMARY

Date: 23-Nov-94 Estimate: BLDG 8944 Description: INSTALL INFARED HEATING SYSTEM COST ESTIMATE Project: LIMITED EEAP(HGR) Bid Date: FORT BRAGG, N.C. Job #: 94013.04 Location: ***** City indx:Raleigh, NC Sq. footage: Description Line # Matl Labor Manhours Equipment Sub 0205541750 PAVEMENT REMOVAL, BITUMINOUS, 4" TO 6" THICK 40.00 S.Y. Unit values 0.10 0.00 1.73 2.50 0.00 Totals 3.80 \$0 \$69 \$100 \$0 \$169 0205543200 SITE REMOVAL, STEEL PIPE, WELDED CONNECTION, UP TO 4"DIAMETER 3000.00 L.F. Unit values 0.15 0.00 2.61 1.06 0.00 3.68 Totals 450.00 \$0 \$7,838 \$3,191 \$0 \$11,029 0207183600 HVAC DEMO, MECH EOPT HEAVY ITEM 3.00 Ton Unit values 14.55 0.00 0.00 314.87 0.00 314.87 Totals 43.64 \$0 \$945 \$0 \$0 \$945 REMOVE PIPE INSULATION UP TO 4" DIAMETER PIPE 0208400600 3000.00 L.F. Unit values 0.07 0.00 1.63 0.20 0.00 1.83 Totals 213.00 \$0 \$4,902 \$587 \$0 \$5,489 0208401000 REMOVE INSULATION FROM PIPE FITTING, UP TO 4" DIAMETER PIPE 400.00 Ea. 0.20 Unit values 0.00 4.60 0.56 0.00 5.16 Totals 80.00 \$0 \$225 \$1,838 \$0 \$2,063 0222541900 TAMPING TRENCH B'FILL, VIBRATING PLATE, ADD 25.00 C.Y. Unit values 0.09 0.00 1.44 0.55 1.99 0.00 Totals \$36 2.23 \$0 \$14 \$0 \$50 0222582800 TRENCH EXCVTNG 40HP CHNTRNCHR&BKFL 12"W24"D 300.00 L.F. Unit values 0.01 0.00 0.20 0.20 0.00 0.39 \$59 Totals 3.00 \$0 \$59 \$0 \$118 0251040380 ASPHALTIC CONCRETE PAVEMENT, PAVING, WEARING COURSE, 2" THICK 40.00 S.Y. 0.02 Unit values 2.96 0.27 0.25 0.00 3.48 Totals 0.60 \$118 \$11 \$10 \$0 \$139

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0260120200 Unit values Totals	BANK	3.79	TRENCH SAN 2.79 \$14	·	5.00 C. 0.00	7.71
0260120500		·	·	·	·	,
Unit values Totals	0.09 0.45	0.00 \$0	1.44 \$7	0.55 \$3	5.00 C. 0.00 \$0	1.99
0266907800	CUT IN VAL	VES, W/DUC	K TIP GASKE	T, 4" DIAN		
Unit values Totals	1.56 1.56	404.00 \$404	29.36 \$29	4.89 \$5	1.00 Ea 0.00 \$0	438.25
0268520150	GAS SERVICE	E & DISTRI	B PIPING, PO	LYETHYLENE	E,60-	_
Unit values Totals	PSI 1-1/4" 0.06 18.60	0.63 \$194	1.10 \$340	0.00 \$0	310.00 L. 0.00 \$0	F. 1.72 \$534
0268520600	GAS SERVICE	E&DISTRIB	PIPING, SCH4	O STEEL PI	AIN	_
Unit values Totals	END, TAR CO 0.11 5.70	3.40 \$170	2.63 \$131	0.15 \$8	50.00 L. 0.00 \$0	6.19 \$309

Line #	Description	on				
	Manhours	Matl	Labor	Equipment	Sub	Total
		=======			=====:	=======
U02 SITEWORK	824	\$905	\$16,219	\$4,208	\$0	\$21,332
1531106180	WTR HTR C	STING VENT	r		1.00	Ea.
Unit values Totals	13.33	2097.90	226.88 \$227	0.00 \$0	0.00	2324.78 \$2,325
1551153320	HTG BR GAS	S CI STD H	HTWR GOP 2	000 MBH		
Unit values Totals				0.00 \$0		Ea. 13863.88 \$13,864
1554510245 Unit values	(See Attac	ched Estin	mate for d	AS ELEC IGN etails) 95408.00	1.00	LS 95408.00
Totals		\$0		\$95,408		\$95,408
1562600137	GAS APPLIATYPE 1-1/4			BLE DIAPHRA	GM 1.00	Ea
Unit values Totals	0.53	225.77	9.14	0.00 \$0	0.00	234.91
U15 MECHANICAL	99	\$14,812	\$1,612	\$95,408	\$0	\$111,832

Line #	Descripti	.on						
	Manhours	Matl	Labor	Equipment	Sub	Total		
						=======		
ESTIMATE TOTAL	923	\$15,717	\$17,831	\$99,616	\$0	\$133,164		
SALES TAX MATL MARKUP	0.00% 0.00%	\$0 \$0						
LABOR MARKUP EQUIPT MARKUP	0.00%		\$0	\$0				
SUB MARKUP	0.00%				\$0			
TOTAL BEFORE C CONTINGENCY BOND	ONTINGENC 20.00% 0.00%	\$15,717	\$17,831	\$99,616	\$0	\$133,164 \$26,633 \$0		
PROFIT	10.00%					\$13,316		
JOB TOTAL						\$173,113		

JOB TOTAL

\$173,113

Estimate: BLDG 8944 Date: 23-Nov-94

Description: INSTALL INFARED HEATING SYSTEM COST ESTIMATE
Project: LIMITED EEAP(HGR) Bid Date:
Location: FORT BRAGG, N.C. Job #: 94013.04
Sq. footage: ******* City indx:Raleigh, NC

SUMMARY						
	Manhours	Matl	Labor	Equipment	Sub	Total
=======================================			======:	=======		
U02 SITEWORK U15 MECHANICAL	824 99	\$905 \$14,812	\$16,219 \$1,612	\$4,208 \$95,408	\$0 \$0	\$21,332 \$111,832
TOTAL	923	\$15,717	\$17,831	\$99,616	\$0	\$133,164
SALES TAX MATL MARKUP LABOR MARKUP	0.00% 0.00% 0.00%	\$0 \$0	\$0			
EQUIPT MARKUP SUB MARKUP	0.00%		Ş0	\$0	\$0	
TOTAL BEFORE COCONTINGENCY BOND	ONTINGENC 20.00% 0.00%	\$15,717	\$17,831	\$99,616	\$0	\$133,164 \$26,633 \$0
PROFIT	10.00%					\$13,316

LIFE CYCLE COST ANALYSIS SUMMARY

ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP)

INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3 PROJECT NO. & TITLE: 94013.04 LES: ECO2 - NAT GAS INFRARED HEAT FISCAL YEAR 95 DISCRETE PORTION NAME: ECO ANALYSIS DATE: 12-12-94 ECONOMIC LIFE 20 YEARS PREPARED BY: G.B. LOFLIN 1. INVESTMENT A. CONSTRUCTION COST \$ 155198.
B. SIOH \$ 7760.
C. DESIGN COST \$ 7760.
D. TOTAL COST (1A+1B+1C) \$ 170718. F. PUBLIC UTILITY COMPANY REBATE \$
G. TOTAL INVESTMENT (1D - 1E - 1F) 0. 0. Ś 170718. 2. ENERGY SAVINGS (+) / COST (-) DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1994 UNIT COST SAVINGS ANNUAL \$ DISCOUNT DISCOUNTED \$/MWH(1) MWH/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5) FUEL 9935. 858647. \$ 0. \$ -360506. 0. Ũ. \$ 0. \$ 508075. 3. NON ENERGY SAVINGS(+) / COST(-) A. ANNUAL RECURRING (+/-) ANNUAL RECURRING (+/-) \$ 1032. (1) DISCOUNT FACTOR (TABLE A) 14.88 (2) DISCOUNTED SAVING/COST (3A X 3A1) \$ 15351. B. NON RECURRING SAVINGS(+) / COSTS(-) SAVINGS(+) YR DISCNT DISCOUNTED

COST(-) OC FACTR SAVINGS(+)/

(1) (2) (3) COST(-)(4) COST(-) OC FACTR
(1) (2) (3) d. TOTAL \$ 0. C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)\$ 15351. 4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))\$ 28526. 5. SIMPLE PAYBACK PERIOD (1G/4) 5.98 YEARS 6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) \$ 523426. 7. SAVINGS TO INVESTMENT RATIO (SIR) = (6 / 1G) = 3.07 (IF < 1 PROJECT DOES NOT QUALIFY) 8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): 8.93 %

LIFE CYCLE COST ANALYSIS SUMMARY STUDY: 9647EO2B ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID FY95 (92) LIFE CYCLE COST ANALYSIS SUMMARY INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3 PROJECT NO. & TITLE: 94013.04 LES: ECO2 - NAT GAS INFRARED HEAT FISCAL YEAR 95 DISCRETE PORTION NAME: ECO ANALYSIS DATE: 12-12-94 ECONOMIC LIFE 20 YEARS PREPARED BY: G.B. LOFLIN 1. INVESTMENT A. CONSTRUCTION COST \$ 186333. \$ 9317. 9317. B. SIOH C. DESIGN COST \$ 9317. D. TOTAL COST (1A+1B+1C) \$ 204967. E. SALVAGE VALUE OF EXISTING EQUIPMENT \$ Ο. F. PUBLIC UTILITY COMPANY REBATE \$ G. TOTAL INVESTMENT (1D - 1E - 1F) 204967. 2. ENERGY SAVINGS (+) / COST (-) DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1994 UNIT COST SAVINGS ANNUAL \$ DISCOUNTED MWH/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5) FUEL S/ MWH(1) 19. 2411. 0. -1444. 0. 0. 659. A. ELECT \$ 34.95 15.08 9935. B. DIST \$ 19.18 46238. 18.57 858647. C. RESID \$.00 D. NAT G \$ 13.44 21.02 0. 18.58 -19403. -360506. E. COAL \$.00 F. PPG \$.00 16.83 0. ٥. 0. 17.38 0. M. DEMAND SAVINGS Ο. 14.88 0. 986. N. TOTAL 27494. 508075. 3. NON ENERGY SAVINGS(+) / COST(-) A. ANNUAL RECURRING (+/-) 1032. (1) DISCOUNT FACTOR (TABLE A) 14.88 (2) DISCOUNTED SAVING/COST (3A X 3A1) 15351. B. NON RECURRING SAVINGS(+) / COSTS(-) SAVINGS(+) YR COST(-) OC DISCOUNTED DISCNT ITEM SAVINGS(+)/ FACTR (1) (2) (3) COST(-)(4)d. TOTAL Ś 0. 0. C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)\$ 15351. 4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))\$ 28526. 5. SIMPLE PAYBACK PERIOD (1G/4) 7.19 YEARS 6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) \$ 523426. 7. SAVINGS TO INVESTMENT RATIO (SIR) = (6 / 1G) =2.55 (IF < 1 PROJECT DOES NOT QUALIFY) 8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): 7.94 %

BLDG 9647 Date: 23-Nov-94 INSTALL INFARED HEATING SYSTEM COST ESTIMATE Description: LIMITED EEAP(HGR) Bid Date: Project: FORT BRAGG, N.C. Job #: 94013.04 Location: ***** City indx:Raleigh, NC Sq. footage: Description Matl Labor Equipment Sub Manhours PAVEMENT REMOVAL, BITUMINOUS, 4" TO 6" THICK 0205541750 40.00 S.Y. Unit values 0.10 0.00 1.73 2.50 0.00 4.23 Totals 3.80 \$0 \$69 \$100 \$0 \$169 0205543200 SITE REMOVAL, STEEL PIPE, WELDED CONNECTION, UP TO 4"DIAMETER 3000.00 L.F. Unit values 0.15 0.00 1.06 2.61 0.00 3.68 450.00 Totals \$0 \$7,838 \$3,191 \$0 \$11,029 0207183600 HVAC DEMO, MECH EQPT HEAVY ITEM 3.00 Ton Unit values 14.55 0.00 314.87 0.00 314.87 0.00 43.64 Totals \$0 \$945 \$0 \$0 \$945 REMOVE PIPE INSULATION UP TO 4" DIAMETER PIPE 0208400600 3000.00 L.F. Unit values 0.07 0.00 1.63 0.20 0.00 1.83 Totals 213.00 \$0 \$4,902 \$587 \$0 \$5,489 0208401000 REMOVE INSULATION FROM PIPE FITTING, UP TO 4" DIAMETER PIPE 400.00 Ea. Unit values 0.20 0.00 4.60 0.56 0.00 5.16 Totals 80.00 \$0 \$1,838 \$225 \$0 \$2,063 0222541900 TAMPING TRENCH B'FILL, VIBRATING PLATE, ADD 25.00 C.Y. Unit values 0.09 0.00 1.44 0.55 0.00 1.99 Totals 2.23 \$0 \$36 \$14 \$0 \$50 0222582800 TRENCH EXCVTNG 40HP CHNTRNCHR&BKFL 12"W24"D 300.00 L.F. Unit values 0.20 0.01 0.00 0.20 0.00 0.39 Totals 3.00 \$59 \$0 \$59 \$0 \$118 0251040380 ASPHALTIC CONCRETE PAVEMENT, PAVING, WEARING COURSE, 2" THICK 40.00 S.Y. Unit values 0.02 2.96 0.27 0.25 3.48 0.00 Totals 0.60 \$118 \$11 \$10 \$0 \$139

.	09-Dec-94		MeansData	for Lotus			Page
,	0260120200	BEDDING, FOR	PIPE IN T	RENCH SAND	, DEAD OR	5 00 C 3	,
	Unit values Totals	0.16 0.80	3.79 \$19	2.79 \$14	1.13 \$6	0.00	7.71 \$39
	0260120500	BEDDING, PLAC	CING IN TR	ENCH			
	Unit values Totals	0.09 0.45	0.00	1.44	0.55 \$3	5.00 C.Y 0.00 \$0	1.99 \$10
	0266907800	CUT IN VALVES	s, w/DUCK ?	TIP GASKET	, 4" DIAME		
	Unit values Totals	1.56 40 1.56	04.00 2 \$404	29.36 \$29	4.89	1.00 Ea. 0.00 \$0	438 25
	0268520150	GAS SERVICE &	DISTRIB I	PIPING, POL	YETHYLENE,	60-	
	0268520150 Unit values Totals	0.06	0.63 \$194	1.10 \$340	0.00	0.00	1.72 \$534
	0268520600	GAS SERVICE&I	DISTRIB PII	PING, SCH40	STEEL PLA	IN 50 00 L E	
	Unit values Totals	0.11 5.70	3.40 \$170	2.63	0.15 \$8	0.00	6.19 \$309

Line #	Description	on				
	Manhours	Matl	Labor	Equipment	Sub	Total
	=======================================	=======				
U02 SITEWORK	824	\$905	\$16,219	\$4,208	\$0	\$21,332
1531106180	WTR HTR CN REUSE EXIS			BH 192 GPH	1.00	Fa
Unit values Totals	13.33	2097.90	226.88	0.00 \$0	0.00	2324.78
1551153320	HTG BR GAS	S CI STD F	HTWR GOP	2000 MBH		_
Unit values Totals				0.00 \$0		13863.88 \$13,864
1554510245				GAS ELEC IGN	7 00	T. C.
Unit values Totals		0.00	0.00	81627.00 \$81,627		81627.00 \$81,627
1562600137		5755		UBLE DIAPHRAC		₽ ∋
Unit values Totals	0.53	225.77 \$226	9.14	0.00 \$0	0.00	234.91 \$235

U15 MECHANICAL 99 \$14,812 \$1,612 \$81,627 \$0 \$98,051

=======================================	=======	========	=======	========	========	========
Line #	Descripti	.on				
	Manhours	Matl	Labor	Equipment	Sub	Total
	=======	:======::		========		=======
ESTIMATE TOTAL	923	\$15,717	\$17,831	\$85,835	\$0	\$119,383
SALES TAX	0.00%	\$0 \$0				
MATL MARKUP LABOR MARKUP	0.00% 0.00%	\$0	\$0			
EQUIPT MARKUP SUB MARKUP	0.00% 0.00%			\$0	\$0	
TOTAL BEFORE C	ONTINGENC	\$15,717	\$17,831	\$85,835	\$0	\$119,383
CONTINGENCY BOND	20.00%	4-07/-	41.,001	403,033	40	\$23,877
PROFIT	10.00%					\$0 \$11,938
JOB TOTAL						\$155,198

\$155,198

JOB TOTAL

Estimate: BLDG 9647 Date: 23-Nov-94
Description: INSTALL INFARED HEATING SYSTEM COST ESTIMATE
Project: LIMITED EEAP(HGR) Bid Date:
Location: FORT BRAGG, N.C. Job #: 94013.04

Sq. footage:	*******	G, N.C.	City indx	:Raleigh, NO	: 					
	SUMMARY									
	Manhours	Matl	Labor	Equipment	Sub	Total				
U02 SITEWORK U15 MECHANICAL	824 99	\$905 \$14,812	\$16,219 \$1,612	\$4,208 \$81,627	\$0 \$0	\$21,332 \$98,051				
TOTAL	923	\$15,717	\$17,831	\$85,835	\$0	\$119,383				
SALES TAX MATL MARKUP LABOR MARKUP	0.00% 0.00% 0.00%	\$0 \$0	\$0	•						
EQUIPT MARKUP SUB MARKUP	0.00% 0.00%			\$0	\$0					
TOTAL BEFORE CONTINGENCY BOND PROFIT	ONTINGENC 20.00% 0.00% 10.00%	\$15,717	\$17,831	\$85,835	\$0	\$119,383 \$23,877 \$0 \$11,938				

9 ECO - 3 Life Cycle Cost Analyses

LIMITED ENERGY STUDY OF HANGAR FACILITIES AT SIMMONS ARMY AIRFIELD, FT. BRAGG, NC

This section contains the life-cycle cost analyses and construction cost estimates for ECO-3: Install Electric Infrared Heaters. The analyses and estimates are sorted by building number.

LCCA AND COST ESTIMATE: (sorted by building)

 2936
 9-3

 3007
 9-11

 3262
 9-19

 3354
 9-27

 3637
 9-35

 3642
 9-43

 3807
 9-51

 3954
 9-59

 3962
 9-67

 4137
 9-75

 4242
 9-83

 7937
 9-91

LCCA ECO-3
All Buildings

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LIFE CYCLE COST ANALYSIS SUMMARY
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP)

STUDY: ECO3TOTE LCCID FY95 (9)
                                                                   FY95 (92)
    INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3
    PROJECT NO. & TITLE: 94013.04 LES: ECO3 - TOTAL ALL BUILDINGS
    FISCAL YEAR 95 DISCRETE PORTION NAME: ECO
    ANALYSIS DATE: 12-13-94 ECONOMIC LIFE 20 YEARS PREPARED BY: G.B. LOFLIN
    1. INVESTMENT
    A. CONSTRUCTION COST
                                 2163885.
    B. SIOH
                              $
                                 108194.
                              $
                                 108194.
    C. DESIGN COST
    D. TOTAL COST (1A+1B+1C) $ 2380274.
    E. SALVAGE VALUE OF EXISTING EQUIPMENT S
                                                   Ο.
    F. PUBLIC UTILITY COMPANY REBATE
                                                   Ο.
    G. TOTAL INVESTMENT (1D - 1E - 1F)
                                                           2380274.
    2. ENERGY SAVINGS (+) / COST (-)
    DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1994
                 UNIT COST SAVINGS ANNUAL $ DISCOUNT
                                                                  DISCOUNTED
                 $/ MWH(1) MWH/YR(2) SAVINGS(3)
        FUEL
                                                     FACTOR(4) SAVINGS(5)
       A. ELECT $ 34.95
B. DIST $ 19.18
C. RESID $ .00
D. NAT G $ 13.44
                            -3940.
21205.
                                           -137705.
                                                          15.08
                                                                    -2076593.
                                           406711.
                                                          18.57
                                                                      7552622.
                                                  0.
                                 0.
                                                                           Ο.
                                                          21.02
                                                  0.
                                                          18.58
                                                                           0.
                                  0.
       E. COAL $ .00
                                  ٥.
                                                 0.
                                                          16.83
                                                                           0.
       F. PPG
                               0.
                                                 0.
                     .00
                                                          17.38
                                                                           0.
       M. DEMAND SAVINGS
                                           -501858.
                                                          14.88
                                                                  $ -7467647.
       N. TOTAL
                              17265.
                                          $ -232852.
                                                                  $ -1991618.
    3. NON ENERGY SAVINGS(+) / COST(-)
      A. ANNUAL RECURRING (+/-)
                                                                      35561.
           (1) DISCOUNT FACTOR (TABLE A)
                                                         14.88
           (2) DISCOUNTED SAVING/COST (3A X 3A1)
                                                                      529148.
      B. NON RECURRING SAVINGS(+) / COSTS(-)
                                SAVINGS(+) YR
                                                  DISCNT
                                                            DISCOUNTED
                                 COST(-)
                   ITEM
                                            OC
                                                  FACTR
                                                            SAVINGS(+)/
                                     (1)
                                            (2)
                                                  (3)
                                                            COST(-)(4)
       d. TOTAL
                                      0.
      C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)$ 529148.
   4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))$ -197291.
   5. SIMPLE PAYBACK PERIOD (1G/4)
                                                                  -12.06 YEARS
   6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C)
                                                                 $ -1462471.
   7. SAVINGS TO INVESTMENT RATIO
                                          (SIR) = (6 / 1G) = -.61
       (IF < 1 PROJECT DOES NOT OUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.
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8. ADJUSTED INTERNAL RATE OF RETURN (AIRR):

N/A

LCCA & COST ESTIMATES (sorted by building)

LIFE CYCLE COST ANALYSIS SUMMARY LIFE CYCLE COST ANALYSIS SUMMARY STUDY: 2936ECO3
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID FY95 (92) INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3 PROJECT NO. & TITLE: 94013.04 LES: ECO3 - ELECTRIC INFRARED HEAT FISCAL YEAR 95 DISCRETE PORTION NAME: ECO ANALYSIS DATE: 12-05-94 ECONOMIC LIFE 20 YEARS PREPARED BY: G.B. LOFLIN 1. INVESTMENT A. CONSTRUCTION COST \$ 223114. 11156. B. SIOH C. DESIGN COST 11156. D. TOTAL COST (1A+1B+1C) \$ 245426. E. SALVAGE VALUE OF EXISTING EQUIPMENT \$ F. PUBLIC UTILITY COMPANY REBATE 0. G. TOTAL INVESTMENT (1D - 1E - 1F) 245426. 2. ENERGY SAVINGS (+) / COST (-) DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1994 UNIT COST SAVINGS ANNUAL \$ DISCOUNT DISCOUNTED \$/ MWH(1) MWH/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5) FUEL

 -485.
 \$ -16936.

 2024.
 \$ 38819.

 0.
 \$ 0.

 0.
 \$ 0.

 0.
 \$ 0.

 0.
 \$ 0.

 0.
 \$ 0.

 5
 -53835.

 1539.
 \$ -31952.

 A. ELECT \$ 34.95 B. DIST \$ 19.18 C. RESID \$.00 D. NAT G \$ 13.44 -16936. 15.08 -255391. 18.57 720861. 21.02 18.58 16.83 17.38 14.88 0. 0. E. COAL \$.00 F. PPG \$.00 0. 0. M. DEMAND SAVINGS -801065. N. TOTAL -335594. 3. NON ENERGY SAVINGS(+) / COST(-) A. ANNUAL RECURRING (+/-) 2574. (1) DISCOUNT FACTOR (TABLE A) 14.88 (2) DISCOUNTED SAVING/COST (3A X 3A1) \$ 38295. B. NON RECURRING SAVINGS(+) / COSTS(-) SAVINGS(+) YR DISCNT DISCOUNTED COST(-) OC (1) (2) OC FACTR SAVINGS(+)/ (3) COST(-)(4)d. TOTAL 0. 0. C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)\$ 38295. 4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))\$ -29379. 5. SIMPLE PAYBACK PERIOD (1G/4) -8.35 YEARS 6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) \$ -297300. (SIR) = (6 / 1G) =7. SAVINGS TO INVESTMENT RATIO (IF < 1 PROJECT DOES NOT QUALIFY) **** Project does not qualify for ECIP funding; 4,5,6 for information only. 8. ADJUSTED INTERNAL RATE OF RETURN (AIRR):

N/A

Estimate: BLDG 2936 Date: 28-Nov-94
Description: ELECTRIC INFRARED HEATING SYSTEM COST ESTIMATE
Project: LIMITED EEAP(HGR) Bid Date:
Location: FORT BRAGG, N. C Job #: 94013.04
Sq. footage: 28800 City indx:Raleigh, NC Description ______ Manhours Matl Labor Equipment Sub FEEDER INSTALLATION, INCLUDING CONDUIT AND 0913100280 WIRE, 200 AMPERES 4000.00 L.F. 6.71 Unit values 0.31 9.45 0.00 0.00 16.16 1224.00 \$37,781 \$26,846 Totals \$0 \$0 \$64,627 0914100360 SWITCHGEAR INST, INCL SWBD, PANELS & CIRC BKR, 1600 AMPERES 1.00 EACH 208.17 13519.60 4568.40 0.00 208.17 \$13,520 \$4,568 \$0 Unit values 0.00 18088.00 Totals \$0 \$18,088

\$0

\$0

\$82,715

A09 ELECTRICAL 1433 \$51,301 \$31,414

=========	========	=======	=======	========	=======	
Line #	Description	on				
	Manhours			Equipment		Total
		=======	=======	=========	======	
0205541750	PAVEMENT F	REMOVAL, 1	BITUMINOUS	, 4" TO 6"	THICK 40.00	C V
Unit values Totals	0.10 3.80	0.00 \$0	1.73 \$69	2.50 \$100	0.00	
0205543200	SITE REMOV					T. 🗗
Unit values Totals	0.15	0.00	2.61 \$10,450	1.06 \$4,255	0.00	3.68
0207183600	HVAC DEMO,	MECH EQP	r heavy it	EM		_
Unit values Totals	14.55 29.09	0.00 \$0	314.87 \$630	0.00 \$0		Ton 314.87 \$630
0208400600	REMOVE PIP	E INSULA	TION UP TO			
Unit values Totals	0.07 284.00	0.00 \$0	1.63 \$6,536	0.20 \$783	4000.00 0.00 \$0	1.83 \$7,319
0208401000	REMOVE INS	TDF		•	E00 00	Pa
Unit values Totals	0.20 100.00	0.00	4.60 \$2,298	0.56 \$281	0.00	5.16 \$2,579
0222540060	EXCAV TREN	R/B'HOE	•	•	25 00	C V
Unit values Totals		0.00	1.47 \$37	1.17 \$29	0.00	2.64
0222541900	TAMPING TR	ENCH B'F	ILL, VIBRA	TING PLATE,		O 17
Unit values Totals	0.09 2.23	0.00 \$0	1.44 \$36	0.55 \$14	25.00 0.00 \$0	
0222543020	BACKFILL T BUCKET, MI		E.LOADER,	WHEEL MTD.	, 1CY 25.00	CV
Unit values Totals	0.03 0.75	0.00 \$0	0.58 \$14		0.00	1.06 \$26
0251040380	ASPHALTIC COURSE, 2"		PAVEMENT,	PAVING, WE	ARING 40.00	c v
Unit values Totals	0.02 0.60	2.96 \$118	0.27 \$11	0.25 \$10	0.00	3.48 \$139

Line #	Description						
	Manhours	Matl	Labor	Equipment	Sub	Total	
=========	=======				=======	========	
U02 SITEWORK	1023	\$118	\$20,081	\$5,484	\$0	\$25,683	
0331305010	6" THICK	SLAB FOR	NEW TRANS	SFORMER	40.00	6.7	
Unit values Totals	0.02 1.15	1.45 \$70	0.28 \$13	0.00 \$0	48.00 0.00 \$0	1.73 \$83	
U03 CONCRETE	2	\$70	\$13	\$0	\$0	\$83	

=======================================	=======	*======	=======			
Line #	Descripti	on				
	Manhours	Matl	Labor	Equipment	Sub	Total
	=======	=======	=======		======	========
1554512050	HTG INFRA	RED ELEC	6KW 20478	BBTU	14.00	Fa
Unit values Totals			44.47 \$623	0.00 \$0	0.00	379.13 \$5,308
1554512100	HTG INFRA	RED ELEC	13.5KW 46	6075.5BTU		_
Unit values Totals	3.20 44.80	455.20 \$6,373		0.00 \$0		Ea. 508.44 \$7,118
1554512150	HTG INFRA	RED ELEC	27KW 9215	51BTU		_
	4.00 132.00		66.55 \$2,196	0.00 \$0		945.86 \$31,213
1574205220	ELECTRIC '	THERMOSTAT	r w/ cover	R AND WIRING		_
Unit values Totals		74.93 \$3,521	20.81 \$978			Ea. 95.74 \$4,499
U15 MECHANICAL	262	\$43,596	\$4,542	\$0	\$0	\$48,138

*	=======	=======	========		======	========
Line #	Descript	ion				
	Manhours			quipment		Total
	=======	=======		=======	======	========
1611400600	MINERAL	INSULATED	CABLE 600V	1 #4	2.00	
Unit values Totals	6.67 20.00	402.81 \$1,208		0.00 \$0	0.00 \$0	
1611400800	MINERAL	INSULATED	CABLE 600V	1 #2	6 00	
Unit values Totals	7.27 43.64	537.08 \$3,222	112.80 \$677	0.00		C.L.F. 649.88 \$3,899
1621100220	OUTLET B	OXES STEEL	, 4" SQ, 2-	1/8" DEEP,		n .
Unit values Totals	0.40	2.36 \$111	6.20 \$292	0.00 \$0	47.00 0.00 \$0	8.57
1621100250	OUTLET B	OX STEEL 4	" COVERS BL	ANK	47.00	n -
Unit values Totals	0.13 5.88	0.54 \$25	1.94 \$91	0.00	47.00 0.00 \$0	2.48
1631200100	HEATING :	SYSTEM POW	ER / CONTRO	L PANEL	10.00	Fo
Unit values Totals	2.96 29.63		45.97 \$460	0.00 \$0	0.00	366.69 \$3,667
1641600500	TRANSFORI	MER OIL PAI	D 15KV 480V	3P1000KVA	1 00	D -
Unit values Totals	76.92 76.92	17408.80 \$17,409	1184.40 \$1,184	225.60 \$226	1.00 0.00 \$0	
1671104800	UNDERGRO	UND DUCT BA	ANK PVC TYPI	E EB 4 - 2'		T 73
Unit values Totals	0.13 33.25	1.48 \$370	2.07 \$517	0.00 \$0	250.00 0.00 \$0	3.55 \$887
U16 ELECTRICAL	229	\$25,552	\$3,531	\$226	\$0	\$29,309

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Line #	Descript	ion				
	Manhours	Matl	Labor	Equipment	Sub	Total
	=======	=======	=======		=======	========
	0040	4100 605	450 501	ĠE 710	^	410
ESTIMATE TOTAL	2949	\$120,637	\$59,581	\$5,710	\$0	\$185,928
SALES TAX MATL MARKUP	0.00%	\$0 \$0				
LABOR MARKUP	0.00%	7 -	\$0			
EQUIPT MARKUP SUB MARKUP	0.00% 0.00%			\$0	\$0	
					·	
TOTAL BEFORE C CONTINGENCY BOND	ONTINGENC 10.00% 0.00%	\$120,637	\$59,581	\$5,710	\$0	\$185,928 \$18,593
PROFIT	10.00%					\$0 \$18,593
JOB TOTAL						\$223,114

Estimate: BLDG 2936 Date: 28-Nov-94

Description: ELECTRIC INFRARED HEATING SYSTEM COST ESTIMATE

LIMITED EEAP(HGR) Bid Date:

Project: Location:

Location: FORT BRAGG, N.C Sq. footage: 28800

Job #: 94013.04 City indx:Raleigh, NC

SUMMARY

	•	SOMMANI				
	Manhours	Matl	Labor	Equipment	Sub	Total
		=========				========
A09 ELECTRICAL U02 SITEWORK U03 CONCRETE U15 MECHANICAL U16 ELECTRICAL	1023 2 262	\$51,301 \$118 \$70 \$43,596 \$25,552	\$31,414 \$20,081 \$13 \$4,542 \$3,531	\$0 \$5,484 \$0 \$0 \$226	\$0 \$0 \$\$0 \$\$0 \$\$0	\$82,715 \$25,683 \$83 \$48,138 \$29,309
TOTAL	2949	\$120,637	\$59,581	\$5,710	\$0	\$185,928
SALES TAX MATL MARKUP LABOR MARKUP EQUIPT MARKUP SUB MARKUP	0.00% 0.00% 0.00% 0.00% 0.00%	\$0 \$0	\$0	\$0	\$0	
TOTAL BEFORE CO CONTINGENCY BOND PROFIT	ONTINGENC 10.00% 0.00% 10.00%	\$120,637	\$59,581	\$5,710	\$0	\$185,928 \$18,593 \$0 \$18,593
JOB TOTAL						\$223,114

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LIFE CYCLE COST ANALYSIS SUMMARY STUDY: 3007ECO3
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID FY95 (92)
    INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3
   PROJECT NO. & TITLE: 94013.04 LES: ECO3 - ELECTRIC INFRARED HEAT
   FISCAL YEAR 95 DISCRETE PORTION NAME: ECO
    ANALYSIS DATE: 12-05-94 ECONOMIC LIFE 20 YEARS PREPARED BY: G.B. LOFLIN
    1. INVESTMENT
   A. CONSTRUCTION COST $
                                    214760.
                                     10738.
   B. SIOH
   C. DESIGN COST
                                     10738.
   D. TOTAL COST (1A+1B+1C) $
                                   236236.
   E. SALVAGE VALUE OF EXISTING EQUIPMENT $
                                                      0.
   F. PUBLIC UTILITY COMPANY REBATE
   G. TOTAL INVESTMENT (1D - 1E - 1F)
                                                                236236.
   2. ENERGY SAVINGS (+) / COST (-)
  DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1994
                 UNIT COST SAVINGS ANNUAL $ DISCOUNT $/ MWH(1) MWH/YR(2) SAVINGS(3) FACTOR(4)
                                                                      DISCOUNTED
                                                         FACTOR(4) SAVINGS(5)
        FUEL
                               -293. $ -10253.

1977. $ 37918.

0. $ 0.

0. $ 0.

0. $ 0.

0. $ 0.

0. $ 0.

1684. $ -47522.
       A. ELECT $ 34.95
B. DIST $ 19.18
                              -293.
                                               -10253.
                                                             15.08
                                                                         -154609.
                                                                          704143.
                                                             18.57
       C. RESID $ .00
D. NAT G $ 13.44
                                                             21.02
                                                                                0.
                                                            18.58
                                                                                0.
       E. COAL $ .00
F. PPG $ .00
                                                            16.83
                                                                                0.
                                                            17.38
                                                                                0.
       M. DEMAND SAVINGS
                                                            14.88
                                                                         -707127.
        N. TOTAL
                                                                         -157594.
   3. NON ENERGY SAVINGS(+) / COST(-)
      A. ANNUAL RECURRING (+/-)
                                                                     $
                                                                            338.
           (1) DISCOUNT FACTOR (TABLE A)
                                                            14.88
           (2) DISCOUNTED SAVING/COST (3A X 3A1)
                                                                            5027.
      B. NON RECURRING SAVINGS(+) / COSTS(-)
                                 SAVINGS(+) YR
                                                     DISCNT
                                                               DISCOUNTED
                   ITEM
                                   COST(-)
                                               OC
                                                     FACTR
                                                                SAVINGS(+)/
                                       (1)
                                               (2)
                                                     (3)
                                                                COST(-)(4)
       d. TOTAL
                                       0.
                                                                        0.
      C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)$ 5027.
   4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))$ -19518.
   5. SIMPLE PAYBACK PERIOD (1G/4)
                                                                      -12.10 YEARS
   6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C)
                                                                      $ -152567.
   7. SAVINGS TO INVESTMENT RATIO
                                             (SIR) = (6 / 1G) = -.65
       (IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.
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LIFE CYCLE COST ANALYSIS SUMMARY

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR):

N/A

287

Estimate: BLDG 3007 Date: 28-Nov-94 Description: ELECTRIC INFRARED HEATING SYSTEM COST ESTIMATE Project: LIMITED EEAP(HGR) Bid Date: FORT BRAGG, N.C Job #: 94013.04 Location: Sq. footage: 31586 City indx:Raleigh, NC Line # Description _____ Manhours Matl Labor Equipment Sub Total 0913100280 FEEDER INSTALLATION, INCLUDING CONDUIT AND WIRE, 200 AMPERES 4000.00 L.F. 6.71 0.31 9.45 Unit values 0.00 0.00 16.16 1224.00 Totals \$37,781 \$26,846 \$0 \$0 \$64,627 0914100360 SWITCHGEAR INST, INCL SWBD, PANELS & CIRC BKR, 1600 AMPERES 208.17 13519.60 1.00 EACH Unit values 4568.40 0.00 0.00 18088.00 Totals 208.17 \$13,520 \$0 \$4,568 \$0 \$18,088 A09 ELECTRICAL 1433 \$51,301 \$31,414 \$Û \$0 \$82,715

PAGE 9-12

=======================================		=======	========	========		
Line #	Descriptio	on				
	Manhours			Equipment		
E=====================================						=======
0205541750					40 00	S.Y.
Unit values Totals	0.10 3.80	0.00 \$0	1.73 \$69	2.50 \$100	0.00 \$0	4.23 \$169
0205543200	SITE REMOV					L.F.
Unit values Totals		0.00	2.61 \$10,450	1.06 \$4,255	0.00	3.68 \$14,705
0207183600	HVAC DEMO,	MECH EQP'	T HEAVY IT	EM	2 00	Man.
Unit values Totals	14.55 29.09	0.00 \$0	314.87 \$630	0.00 \$0	0.00 \$0	314.87 \$630
0208400600						
Unit values Totals	0.07 284.00	0.00 \$0	1.63 \$6,536	0.20 \$783	0.00	1.83 \$7,319
0208401000 Unit values Totals	DIAMETER P			FITTING, UP 0.56 \$281		
0222540060	EXCAV TREN	CH, COMMO	ON EARTH,	1'-4' DEEP	1/2 25.00	CV
Unit values Totals	0.08	0.00	1.47 \$37	1.17 \$29	0.00	2.64
0222541900	TAMPING TR	ENCH B'F	ILL, VIBRA	TING PLATE,	ADD 25.00	
Unit values Totals	0.09 2.23	0.00 \$0	1.44 \$36	0.55 \$14	0.00	1.99 \$50
0222543020	BACKFILL T BUCKET, MI		.E.LOADER,	WHEEL MTD.	, 1CY 25.00	C V
Unit values Totals	0.03 0.75	0.00 \$0	0.58 \$14	0.48 \$12	0.00	1.06 \$26
0251040380	ASPHALTIC COURSE, 2"		PAVEMENT,	PAVING, WE	EARING 40.00	s v
Unit values Totals	0.02 0.60	2.96 \$118	0.27 \$11	0.25 \$10	0.00	3.48 \$139

Line #	Description	on				
=======================================	Manhours	Matl	Labor	Equipment	Sub	Total

	Manhours	Matl	Labor	Equipment	Sub	Total
U02 SITEWORK	1023	\$118	\$20,081	\$5,484	\$0	\$25,683
		SLAB FOR		SFORMER	ŞU	\$25,663
0331305010	•				48.00	
Unit values Totals	0.02 1.15	1.45 \$70	0.28 \$13	0.00 \$0	0.00	1.73 \$83
U03 CONCRETE	2	\$70	\$13	\$0	\$0	\$83

Line #	Description							
	Manhours	Matl	Labor	Equipment	Sub	Total		
=========	=======		:=====:					
1554512050	HTG INFRA	RED ELEC	6KW 2047	BBTU	7.00	Ea		
Unit values Totals		334.67 \$2,343	44.47 \$311	0.00 \$0	0.00			
1554512100	HTG INFRA	RED ELEC	13.5KW 4	5075.5BTU	7.00	Fo		
Unit values Totals		455.20 \$3,186	53.24 \$373	0.00 \$0	0.00			
1554512150	HTG INFRA	RED ELEC	27KW 9219	51BTU	22.00	n-		
Unit values Totals		879.31 \$29,017		0.00 \$0	33.00 0.00 \$0	945.86		
1574205220	ELECTRIC	THERMOSTAT	W/ COVE	R AND WIRING		_		
Unit values Totals		74.93 \$2,997		0.00 \$0		Ea. 95.74 \$3,829		
U15 MECHANICAL	214	\$37,543	\$3,712	\$0	\$0	\$41,255		

Line #	Description								
	Manhours			Equipment		Total			
	=======	=======	=======		======	========			
1611400600	MINERAL	INSULATED	CABLE 60	OV 1 #4	3 00	C.L.F.			
Unit values Totals	6.67 20.00	402.81 \$1,208	103.21 \$310	0.00 \$0	0.00 \$0	506.02			
1611400800	MINERAL	INSULATED	CABLE 60	OV 1 #2	<i>c</i> 00				
Unit values Totals	7.27 43.64	537.08 \$3,222	112.80 \$677	0.00 \$0	0.00	C.L.F. 649.88 \$3,899			
1621100220	OUTLET B	OXES STEEI	J, 4" SQ,	2-1/8" DEEP,		П-			
Unit values Totals	0.40	2.36 \$94	6.20 \$248	0.00 \$C	40.00 0.00 \$0	8.57			
1621100250	OUTLET B	OX STEEL 4	" COVERS I	BLANK	40.00	n -			
Unit values Totals	0.13 5.00	0.54 \$21	1.94 \$78	0.00 \$0	40.00 0.00 \$0	2.48 \$99			
1631200100	HEATING SYSTEM POWER / CONTROL PANEL								
Unit values Totals	2.96 29.63	320.72 \$3,207	45.97 \$460	0.00	10.00 0.00 \$0	366.69			
1641600500	TRANSFORMER OIL PAD 15KV 480V 3P1000KVA								
Unit values Totals	76.92 76.92		1184.40 \$1,184		1.00 0.00 \$0				
1671104800	UNDERGRO	UND DUCT E	BANK PVC TY	YPE EB 4 - 2					
Unit values Totals	0.13 33.25	1.48 \$370	2.07 \$517	0.00 \$0	250.00 0.00 \$0	3.55			
U16 ELECTRICAL	225	\$25,531	\$3,474	\$226	\$0	\$29,231			

Line #	Description								
	Manhours	Matl	Labor	Equipment	Sub	Total			
ESTIMATE TOTAL	2897	\$114,563	\$58,694	\$5,710	\$0	\$178,967			
SALES TAX MATL MARKUP	0.00%	\$0 \$0							
LABOR MARKUP EQUIPT MARKUP	0.00% 0.00%	·	\$0	\$0					
SUB MARKUP	0.00%				\$0				
TOTAL BEFORE C CONTINGENCY BOND	ONTINGENC 10.00% 0.00%	\$114,563	\$58,694	\$5,710	\$0	\$178,967 \$17,897 \$0			
PROFIT	10.00%					\$17,897			
JOB TOTAL						\$214.760			

Estimate: BLDG 3007 Date: 28-Nov-94
Description: ELECTRIC INFRARED HEATING SYSTEM COST ESTIMATE
Project: LIMITED EEAP(HGR) Bid Date:
Location: FORT BRAGG, N. C Job #: 94013.04 Sq. footage: 31586 City indx:Raleigh, NC

CITMMADV

																					S	U	[v]	ΙvΙ	A	K	Ι.
 -	_	_	_	-	_	_	_	-	_	-	_	_	-	_	-	-	_	-	_	_	_	-	-	-	-	-	-
													Μ	a	n	h	0	u	r	s				Μ	a	t	1

	•	JOI 11 11 11 11 11 11 11 11 11 11 11 11 11				
	Manhours	Matl	Labor	Equipment	Sub	Total
A09 ELECTRICAL U02 SITEWORK U03 CONCRETE U15 MECHANICAL U16 ELECTRICAL	1433 1023 2 214 225	\$51,301 \$118 \$70 \$37,543 \$25,531	\$31,414 \$20,081 \$13 \$3,712 \$3,474	\$0 \$5,484 \$0 \$0 \$226	\$0 \$0 \$0 \$0 \$0	\$82,715 \$25,683 \$83 \$41,255 \$29,231
TOTAL	2897	\$114,563	\$58,694	\$5,710	\$0	\$178,967
SALES TAX MATL MARKUP LABOR MARKUP EQUIPT MARKUP SUB MARKUP	0.00% 0.00% 0.00% 0.00% 0.00%	\$0 \$0	\$0	\$0	\$0	
TOTAL BEFORE CO CONTINGENCY BOND PROFIT	ONTINGENC 10.00% 0.00% 10.00%	\$114,563	\$58,694	\$5,710	\$0	\$178,967 \$17,897 \$0 \$17,897
JOB TOTAL						\$214,760

LIFE CYCLE COST ANALYSIS SUMMARY STUDY: 3262ECO3
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID FY95 (92)
INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3 PROJECT NO. & TITLE: 94013.04 LES: ECO3 - ELECTRIC INFRARED HEAT FISCAL YEAR 95 DISCRETE PORTION NAME: ECO ANALYSIS DATE: 12-05-94 ECONOMIC LIFE 20 YEARS PREPARED BY: G.B. LOFLIN 1. INVESTMENT 164675. A. CONSTRUCTION COST 8234. B. SIOH 8234. C. DESIGN COST D. TOTAL COST (1A+1B+1C) \$ 181143. E. SALVAGE VALUE OF EXISTING EQUIPMENT \$ Ο. F. PUBLIC UTILITY COMPANY REBATE 0. 181143. G. TOTAL INVESTMENT (1D - 1E - 1F) 2. ENERGY SAVINGS (+) / COST (-) DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1994 UNIT COST SAVINGS ANNUAL \$ DISCOUNT DISCOUNTED FUEL s/ MWH(1) MWH/YR(2) SAVINGS(3) FACTOR (4) SAVINGS (5) -870. \$ -30392.
2023. \$ 38804.
0. \$ 0.
0. \$ 0.
0. \$ 0.
0. \$ 0.
1154. \$ -33074. A. ELECT \$ 34.95 B. DIST \$ 19.18 C. RESID \$.00 D. NAT G \$ 13.44 -870. 15.08 -458314. 18.57 720594. 0. 0. 21.02 0. 18.58 E. COAL \$.00 F. PPG \$.00 16.83 0. 17.38 M. DEMAND SAVINGS 14.88 -617312. N. TOTAL -355031. 3. NON ENERGY SAVINGS(+) / COST(-) A. ANNUAL RECURRING (+/-) 2786. (1) DISCOUNT FACTOR (TABLE A) 14.88 (2) DISCOUNTED SAVING/COST (3A X 3A1) 41455. B. NON RECURRING SAVINGS(+) / COSTS(-) SAVINGS(+) YR DISCNT DISCOUNTED COST(-) OC FACTR SAVINGS(+)/ (1) (2) (3) COST(-)(4)JATOT . b 0. 0. C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)\$ 41455. 4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))\$ -30288. 5. SIMPLE PAYBACK PERIOD (1G/4) -5.98 YEARS 6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) \$ -313577. 7. SAVINGS TO INVESTMENT RATIO (IF < 1 PROJECT DOES NOT QUALIFY) (SIR) = (6 / 1G) = -1.73**** Project does not qualify for ECIP funding; 4,5,6 for information only. 8. ADJUSTED INTERNAL RATE OF RETURN (AIRR):

N/A

Description: ELECTRIC INFRARED HEATING SYSTEM COST ESTIMATE Project: LIMITED EEAP(HGR) Bid Date:

Location: FORT BRAGG, N.C Job #: 94013 04 Estimate: BLDG 3262 FORT BRAGG, N.C Job #: Sq. footage: 25877 City indx:Raleigh, NC Line # Description ______ Manhours Matl Labor Equipment Sub Total 0913100280 FEEDER INSTALLATION, INCLUDING CONDUIT AND WIRE, 200 AMPERES 0.31 9.45 3000.00 L.F. 6.71 0.00 Unit values 0.00 16.16 \$28,336 \$20,135 Totals 918.00 \$0 \$0 \$48,471 0914100280 SWITCHGEAR INST, INCL SWBD, PANELS & CIRC BKR, 800 AMPERES 96.93 7986.75 1.00 EACH Unit values 7986.75 2129.10 0.00 \$7,987 \$2,129 \$0 0.00 10115.85 Totals 96.93 \$0 \$10,116 A09 ELECTRICAL 1015 \$36,323 \$22,264 \$0 \$0 \$58,587

=======================================		.======				
Line #	Description	n				
	Manhours			Equipment		Total
		:======				
0205541750	PAVEMENT F	REMOVAL,	BITUMINOUS	, 4" TO 6"	THICK 30.00	S V
Unit values Totals	0.10 2.85	0.00 \$0	1.73 \$52	2.50 \$75	0.00	4.23
0205543200	SITE REMOV	סי			2000 00	T D
Unit values Totals	0.15 300.00	0.00	2.61 \$5,225	1.06 \$2,128	0.00	3.68
0207183600	HVAC DEMO,	MECH EQP	T HEAVY IT	EM	4 00	m
Unit values Totals	14.55 58.18	0.00 \$0	314.87 \$1,259			314.87 \$1,259
0208400600	REMOVE PIP	E INSULA	TION UP TO	4" DIAMETE		
Unit values Totals	0.07 142.00	0.00 \$0	1.63 \$3,268	0.20 \$391	2000.00 0.00 \$0	1.83 \$3,659
0208401000 Unit values Totals	REMOVE INS DIAMETER F 0.20 50.00			FITTING, UP 0.56 \$140		Ea. 5.16 \$1,289
0222540060	EXCAV TREN	CH, COMM				
Unit values Totals	CY TRAC/LD 0.08 1.60	0.00 0.00 \$0	1.47 \$29	1.17 \$23	20.00 0.00 \$0	C.Y. 2.64 \$52
0222541900	TAMPING TR	ENCH B'F	ILL, VIBRA	TING PLATE,		
Unit values Totals	0.09 1.78	0.00 \$0	1.44 \$29	0.55 \$11	20.00 0.00 \$0	1.99 \$40
0222543020			.E.LOADER,	WHEEL MTD.		G V
Unit values Totals	BUCKET, MI 0.03 0.60	0.00 \$0	0.58 \$12	0.48 \$10	20.00 0.00 \$0	1.06 \$22
0251040380			PAVEMENT,	PAVING, WE		c v
Unit values Totals	COURSE, 2" 0.02 0.45	2.96 \$89	0.27 \$8	0,25 \$7	30.00 0.00 \$0	3.48 \$104

Line #	Description	on				
	Manhours	Matl	Labor	Equipment	Sub	Total
U02 SITEWORK	558	\$89	\$11,031	\$2,785	\$0	\$13,905
0331305010	6" THICK	SLAB FOR	NEW TRANS	SFORMER	48.00	C D
Unit values Totals	0.02 1.15	1.45 \$70	0.28 \$13	0.00 \$0	48.00 0.00 \$0	1.73 \$83
U03 CONCRETE	2	\$70	\$13	\$0	\$0	\$83

Line #	Descripti	.on				
	Manhours	Matl	Labor	Equipment	Sub	Total
	=======				======	========
1554512050	HTG INFRA	RED ELEC	6KW 20478	BBTU	10.00	T-
Unit values Totals	2.67 26.67		44.47 \$445	0.00 \$0	0.00	
1554512100	HTG INFRA	RED ELEC	13.5KW 46	5075.5BTU	10.00	n -
Unit values Totals	3.20 32.00	455.20 \$4,552	53.24 \$532	0.00 \$0	10.00 0.00 \$0	508.44
1554512150	HTG INFRA	RED ELEC	27KW 9215	51BTU	26.00	П-
Unit values Totals	4.00 104.00	879.31 \$22,862	66.55 \$1,730	0.00 \$0	26.00 0.00 \$0	945.86 \$24,592
1574205220	ELECTRIC	THERMOSTA?	r w/ cover	R AND WIRING	26.00	m .
Unit values Totals	1.00	74.93 \$2,697	20.81 \$749	0.00 \$0	36.00 0.00 \$0	95.74 \$3,446
U15 MECHANICAL	199	\$33,458	\$3,456	\$0	\$0	\$36,914

Line #	Descript	ion				
	Manhours	Matl		Equipment		Total
					======	=======
1611400600	MINERAL :	INSULATED (CABLE 600V	1 #4	2 50	C.L.F.
Unit values Totals	6.67 16.67	402.81 \$1,007	103.21 \$258	0.00 \$0	0.00	506.02
1611400800	MINERAL	INSULATED (CABLE 600V	1 #2	F 00	C.L.F.
Unit values Totals	7.27 36.37		112.80 \$564		0.00	649.88
1621100220	OUTLET BO	XES STEEL	, 4" SQ, 2-	1/8" DEEP,	1" 36.00	To.
Unit values Totals	0.40 14.40	2.36 \$85	6.20 \$223	0.00 \$0	0.00	8.57
1621100250	OUTLET BO	X STEEL 4	" COVERS BL	ANK	36.00	F.a.
Unit values Totals	0.13 4.50	0.54 \$19	1.94 \$70	0.00 \$0	0.00	2.48
1631200100	HEATING S	SYSTEM POWI	er / contro	L PANEL	9.00	Eo
Unit values Totals	2.96 26.67	320.72 \$2,886	45.97 \$414	0.00 \$0	0.00 \$0	366.69
1641600500	TRANSFORM	ER OIL PAI	15KV 480V	3P1000KVA	1 00	T-
Unit values Totals	76.92 76.92	17408.80 \$17,409	1184.40 \$1,184		1.00 0.00 \$0	
1671104800	UNDERGROU	ND DUCT BA	ANK PVC TYP	E EB 4 - 2'		.
Unit values Totals	0.13 26.60	1.48 \$296	2.07 \$414	0.00 \$0	200.00 0.00 \$0	3.55 \$710
U16 ELECTRICAL	203	\$24,387	\$3,127	\$226	\$0	\$27,740

*******	========	=======	=======	=========	=======	========
Line #	Descripti	on				
	Manhours	Matl	Labor	Equipment	Sub	Total
				=======================================	. = = = = = = = = = =	
ESTIMATE TOTAL	1977	\$94,327	\$39,891	\$3,011	\$0	\$137,229
SALES TAX MATL MARKUP LABOR MARKUP	0.00% 0.00% 0.00%	\$0 \$0	\$0			
EQUIPT MARKUP SUB MARKUP	0.00%		Ş0	\$0	\$0	
TOTAL BEFORE CONTINGENCY BOND PROFIT	ONTINGENC 10.00% 0.00% 10.00%	\$94,327	\$39,891	\$3,011	\$0	\$137,229 \$13,723 \$0 \$13,723
JOB TOTAL						\$164,675

Estimate: BLDG 3262 Date: 28-Nov-94

Description: ELECTRIC INFRARED HEATING SYSTEM COST ESTIMATE Project: LIMITED EEAP(HGR) Bid Date:

Location: FORT BRAGG, N.C Job #: Sq. footage: 25877 94013.04 City indx:Raleigh NC

Sq. footage:	25877		City indx	:Kaleign, NC		
==========	S	UMMARY				=======
	Manhours	Matl	Labor	Equipment	Sub	Total
A09 ELECTRICAL U02 SITEWORK U03 CONCRETE U15 MECHANICAL U16 ELECTRICAL	558 2	\$36,323 \$89 \$70 \$33,458 \$24,387	\$22,264 \$11,031 \$13 \$3,456 \$3,127	\$0 \$2,785 \$0 \$0 \$226	\$00 \$00 \$00 \$00	\$58,587 \$13,905 \$83 \$36,914 \$27,740
TOTAL	1977	\$94,327	\$39,891	\$3,011	\$0	\$137,229
SALES TAX MATL MARKUP LABOR MARKUP EQUIPT MARKUP SUB MARKUP	0.00% 0.00% 0.00% 0.00% 0.00%	\$0 \$0	\$0	\$0	\$0	
TOTAL BEFORE CO CONTINGENCY BOND PROFIT	ONTINGENC 10.00% 0.00% 10.00%	\$94,327	\$39,891	\$3,011	\$0	\$137,229 \$13,723 \$0 \$13,723
JOB TOTAL						\$164,675

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LIFE CYCLE COST ANALYSIS SUMMARY

ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP)

INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3
    PROJECT NO. & TITLE: 94013.04 LES: ECO3 - ELECTRIC INFRARED HEAT
    FISCAL YEAR 95 DISCRETE PORTION NAME: ECO
    ANALYSIS DATE: 12-05-94 ECONOMIC LIFE 20 YEARS PREPARED BY: G.B. LOFLIN
    1. INVESTMENT
    A. CONSTRUCTION COST $
                                      105584.
                                     5279.
                                  $
    B. SIOH
                                        5279.
    C. DESIGN COST
    D. TOTAL COST (1A+1B+1C) $ 116142.
    E. SALVAGE VALUE OF EXISTING EQUIPMENT $
                                                         Ο.
    F. PUBLIC UTILITY COMPANY REBATE
                                                         Ο.
    G. TOTAL INVESTMENT (1D - 1E - 1F)
                                                                   116142.
    2. ENERGY SAVINGS (+) / COST (-)
    DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1994
                  UNIT COST SAVINGS ANNUAL $ DISCOUNT DISCOUNTED $/ MWH(1) MWH/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5)
                  $/ MWH(1)
                               -130. $ -4545.

828. $ 15885.

0. $ 0.

0. $ 0.

0. $ 0.

0. $ 0.

0. $ 0.

698. $ -24975.
        A. ELECT $ 34.95
B. DIST $ 19.18
C. RESID $ .00
D. NAT G $ 13.44
                                                   -4545.
                                                                 15.08
18.57
                                                                              -68532.
                                                                               294986.
                                                                21.02
                                                                                   0.
                                                                          $ 0.
$ 0.
$ 0.
$ -371628.
$ -145174.
                                                               18.58
16.83
17.38
14.88
        E. COAL $ .00
F. PPG $ .00
        M. DEMAND SAVINGS
        N. TOTAL
    3. NON ENERGY SAVINGS(+) / COST(-)
                                                                         $
       A. ANNUAL RECURRING (+/-)
                                                               14.88
                                                                                5189.
            (1) DISCOUNT FACTOR (TABLE A)
            (2) DISCOUNTED SAVING/COST (3A X 3A1)
                                                                          $ 77210.
       B. NON RECURRING SAVINGS(+) / COSTS(-)
                                   SAVINGS(+) YR
                                                      DISCNT
                                     AV1NG5 ( ...
COST(-) UC (2)
                                                                  DISCOUNTED
                                                 OC FACTR
                                                                   SAVINGS(+)/
                                                        (3)
                                                                   COST(-)(4)
        d. TOTAL
                                        0.
       C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)$ 77210.
    4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))$ -8446.
    5. SIMPLE PAYBACK PERIOD (1G/4)
                                                                          -13.75 YEARS
    6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C)
                                                                          $ -67964.
    7. SAVINGS TO INVESTMENT RATIO
                                               (SIR) = (6 / 1G) = -.59
        (IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.
```

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR):

N/A

Estimate: BLDG 3354 Date: 28-Nov-94 Description: ELECTRIC INFRARED HEATING SYSTEM COST ESTIMATE Project: LIMITED EEAP(HGR) Bid Date: FORT BRAGG, N.C Job #: 94013.04 Location: Sq. footage: 19500 City indx:Raleigh, NC Description Manhours Matl Labor Equipment Sub _______ 0913100280 FEEDER INSTALLATION, INCLUDING CONDUIT AND WIRE, 200 AMPERES 0.31 9.45 2000.00 L.F. Unit values 6.71 0.00 0.00 16.16 Totals 612.00 \$18,890 \$13,423 \$0 \$0 \$32,313 0914100200 SWITCHGEAR INST, INCL SWBD, PANELS & CIRC BKR, 400 AMPS 1.00 EACH Unit values 50.36 2731.70 1099.80 0.00 0.00 3831.50 Totals 50.36 \$2,732 \$0 \$1,100 \$0 \$3,832 A09 ELECTRICAL 663 \$21,622 \$14,523 \$0 \$0 \$36,145

Line #	Description	on				
	Manhours			Equipment	,	Total
	=======					========
0205541750	PAVEMENT I	REMOVAL,	BITUMINOUS	6, 4" TO 6"	THICK 30.00	C V
Unit values Totals	0.10 2.85	0.00 \$0		2.50 \$75	0.00	4.23 \$127
0205543200	SITE REMOV		PIPE, WELD	ED CONNECT	ON, 1600.00	T. ਸਾ
Unit values Totals	0.15 240.00		2.61 \$4,180	1.06 \$1,702	0.00	3.68 \$5,882
0207183600	HVAC DEMO	MECH EQP	T HEAVY IT	EM	1.50	Ton
Unit values Totals	14.55 21.82	0.00 \$0	314.87 \$472	0.00 \$0		314.87 \$472
0208400600	REMOVE PI	PE INSULA	TION UP TO		1400 00	T 12
Unit values Totals	0.07 99.40	0.00 \$0	1.63 \$2,287	0.20 \$274	0.00	1.83
0208401000	REMOVE INS		FROM PIPE	FITTING, UE	TO 4"	
Unit values Totals	0.20 32.00	0.00	4.60 \$735	0.56 \$90	0.00	5.16 \$825
0222540060	EXCAV TREN		ON EARTH,	1'-4' DEEP,	1/2 15.00	CV
Unit values Totals	0.08	0.00	1.47 \$22	1.17 \$17	0.00	2.64
0222541900	TAMPING TR	RENCH B'F	ILL, VIBRA	TING PLATE,		C V
Unit values Totals	0.09 1.34	0.00 \$0	1.44 \$22	0.55 \$8	15.00 0.00 \$0	1.99
0222543020	BACKFILL T BUCKET, MI		.E.LOADER,	WHEEL MTD.	•	C V
Unit values Totals	0.03 0.45	0.00 \$0	0.58 \$9	0.48 \$7	15.00 0.00 \$0	1.06
0251040380	ASPHALTIC COURSE, 2"	CONCRETE	PAVEMENT,	PAVING, WE		c v
Unit values Totals	0.02 0.45	2.96 \$89	0.27 \$8	0.25 \$7	30.00 0.00 \$0	3.48 \$104

Line #	Description										
	Manhours	Matl	Labor	Equipment	Sub	Total					
U02 SITEWORK	400	\$89	\$7,787	\$2,180	\$0	\$10,056					
0331305010	6" THICK	·	. ,	SFORMER	·						
Unit values Totals	0.02 1.15	1.45 \$70	0.28 \$13	0.00 \$0	48.00 0.00 \$0	S.F. 1.73 \$83					
U03 CONCRETE	2	\$70	\$13	\$0	\$0	\$83					

=======================================		========			======	
Line #	Descripti	lon				
	Manhours	Matl	Labor	Equipment	Sub	Total
=======================================						
1554512150	HTG INFRA	A RED ELEC	27KW 9215	51BTU	20.00	Fa
Unit values Totals	4.00 80.00	879.31 \$17,586	66.55 \$1,331	0.00 \$0		945.86 \$18,917
1574205220	ELECTRIC	THERMOSTAT	W/ COVER	R AND WIRING	20.00	m-
Unit values Totals	1.00	74.93 \$1,499	20.81 \$416	0.00 \$0	20.00 0.00 \$0	95.74 \$1,915
U15 MECHANICAL	100	\$19,085	\$1,747	\$0	\$0	\$20,832

Line #	Descripti	lon				
	Manhours	Matl		quipment		Total
***********			:=======:		======	========
1611400600	MINERAL I	(NSULATED C	CABLE 600V	1 #4	2 50	C.L.F.
Unit values Totals	6.67 16.67	402.81 \$1,007	103.21 \$258	0.00 \$0	0.00	
1611400800	MINERAL 1	NSULATED C	CABLE 600V	1 #2		
Unit values Totals	7.27 36.37	537.08 \$2,685	112.80 \$564		5.00 0.00 \$0	
1621100220	OUTLET BO	XES STEEL,	4" SQ, 2-1	L/8" DEEP,		D -
Unit values Totals	0.40 8.00	2.36 \$47	6.20 \$124	0.00 \$0	20.00 0.00 \$0	8.57 \$171
1621100250	OUTLET BO	X STEEL 4"	COVERS BLA	NK	20.00	n -
Unit values Totals	0.13 2.50	0.54 \$11	1.94 \$39	0.00 \$0	20.00 0.00 \$0	2.48 \$50
1631200100	HEATING S	SYSTEM POWE	R / CONTROL	PANEL	5 7.00	-
Unit values Totals	2.96 20.74	320.72 \$2,245	45.97 \$322	0.00 \$0	7.00 0.00 \$0	Ea. 366.69 \$2,567
1641600300	TRANSFORM	ER OIL PAD	15KV 480V	3P500KVA		
Unit values Totals	50.00 50.00	11760.20 \$11,760	775.50 \$776	146.08 \$146	1.00 0.00 \$0	
1671104800	UNDERGROU	ND DUCT BA	NK PVC TYPE	EB 4 - 2		T 15
Unit values Totals	0.13 33.25	1.48 \$370	2.07 \$517		250.00 0.00 \$0	3.55 \$887
U16 ELECTRICAL	168	\$18,125	\$2,600	\$146	\$0	\$20,871

Line #	Descripti	.on				
	Manhours	Matl	Labor	Equipment	Sub	Total
ESTIMATE TOTAL	1333	\$58,991	\$26,670	\$2,326	\$0	\$87,987
SALES TAX MATL MARKUP	0.00% 0.00%	\$0 \$0				
LABOR MARKUP EQUIPT MARKUP	0.00% 0.00%		\$0	\$0		
SUB MARKUP	0.00%				\$0	
TOTAL BEFORE C CONTINGENCY BOND	ONTINGENC 10.00% 0.00%	\$58,991	\$26,670	\$2,326	\$0	\$87,987 \$8,799
PROFIT	10.00%					\$0 \$8,799
JOB TOTAL						\$105,584

JOB TOTAL

Estimate: BLDG 3354 Date: 28-Nov-94

Description: ELECTRIC INFRARED HEATING SYSTEM COST ESTIMATE
Project: LIMITED EEAP(HGR) Bid Date:
Location: FORT BRAGG, N.C Job #: 94013.04
Sq. footage: 19500 City indx:Raleigh, NC

SUMMARY							
	Manhours	Matl	Labor	Equipment	Sub	Total	
A09 ELECTRICAL U02 SITEWORK U03 CONCRETE U15 MECHANICAL U16 ELECTRICAL	663 400 2 100 168	\$21,622 \$89 \$70 \$19,085 \$18,125	\$14,523 \$7,787 \$13 \$1,747 \$2,600	\$0 \$2,180 \$0 \$0 \$146	\$\$\$ \$\$\$ \$\$\$ \$	\$36,145 \$10,056 \$83 \$20,832 \$20,871	
TOTAL	1333	\$58,991	\$26,670	\$2,326	\$0	\$87,987	
SALES TAX MATL MARKUP LABOR MARKUP EQUIPT MARKUP SUB MARKUP	0.00% 0.00% 0.00% 0.00% 0.00%	\$0 \$0	\$0	\$0	\$0		
TOTAL BEFORE CO CONTINGENCY BOND PROFIT	ONTINGENC 10.00% 0.00% 10.00%	\$58,991	\$26,670	\$2,326	\$0	\$87,987 \$8,799 \$0 \$8,799	

\$105,584

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LIFE CYCLE COST ANALYSIS SUMMARY STUDY: 3637ECO3
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID FY95 (92)
               LIFE CYCLE COST ANALYSIS SUMMARY
    INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3
    PROJECT NO. & TITLE: 94013.04 LES: ECO3 - ELECTRIC INFRARED HEAT
    FISCAL YEAR 95 DISCRETE PORTION NAME: ECO
    ANALYSIS DATE: 12-05-94 ECONOMIC LIFE 20 YEARS PREPARED BY: G.B. LOFLIN
    1. INVESTMENT
    A. CONSTRUCTION COST $
                                      91571.
    B. SIOH
                                      4579.
    C. DESIGN COST $ 4579.
D. TOTAL COST (1A+1B+1C) $ 100729.
    E. SALVAGE VALUE OF EXISTING EQUIPMENT $
    F. PUBLIC UTILITY COMPANY REBATE $
                                                       0.
    G. TOTAL INVESTMENT (1D - 1E - 1F)
                                                                 100729.
    2. ENERGY SAVINGS (+) / COST (-)
    DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1994
                  UNIT COST SAVINGS ANNUAL $ DISCOUNTED
                  $/ MWH(1) MWH/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5)
        A. ELECT $ 34.95
B. DIST $ 19.18
C. RESID $ .00
D. NAT G $ 13.44
                                                 -4172.
                                -119.
883.
                                  -119. $ -4172. 15.08

883. $ 16937. 18.57

0. $ 0. 21.02

0. $ 0. 18.58

0. $ 0. 16.83

0. $ 0. 17.38

$ -19494. 14.88

764. $ -6729.
                                                               15.08
                                                                            -62913.
                                                                            314522.
                                 0.
                                                                                 0.
                                                                                 0.
        E. COAL $ .00
F. PPG $ .00
                                                                                 0.
        M. DEMAND SAVINGS
                                                                           -290071.
        N. TOTAL
                                                                            -38462.
    3. NON ENERGY SAVINGS (+) / COST (-)
       A. ANNUAL RECURRING (+/-)
                                                                      $ 300.
            (1) DISCOUNT FACTOR (TABLE A)
                                                            14.88
            (2) DISCOUNTED SAVING/COST (3A X 3A1)
                                                                            4464.
       B. NON RECURRING SAVINGS(+) / COSTS(-)
                                  SAVINGS(+) YR DISCNT
COST(-) OC FACTR
                                    VINGS ( - )
                                                                 DISCOUNTED
                    ITEM
                                                                 SAVINGS(+)/
                                                (2)
                                                     (3)
                                                                 COST(-)(4)
        d. TOTAL
       C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)$ 4464.
    4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))$
    5. SIMPLE PAYBACK PERIOD (1G/4)
                                                                        -15.67 YEARS
    6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C)
                                                                       $ -33998.
    7. SAVINGS TO INVESTMENT RATIO
                                              (SIR) = (6 / 1G) =
                                                                    -.34
       (IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.
    8. ADJUSTED INTERNAL RATE OF RETURN (AIRR):
                                                                        N/A
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_______ Estimate: BLDG 3637 Date: 28-Nov-94 Description: ELECTRIC INFRARED HEATING SYSTEM COST ESTIMATE LIMITED EEAP(HGR) Bid Date: Project: FORT BRAGG, N.C Job #: 94013.04 Location: Sq. footage: 12000 City indx:Raleigh, NC Description Line # Manhours Matl Labor Equipment Sub Total _____ FEEDER INSTALLATION, INCLUDING CONDUIT AND 0913100280 WIRE, 200 AMPERES 1800.00 L.F. 6.71 0.00 16.16 Unit values 0.31 9.45 0.00 550.80 \$17,001 \$12,081 Totals \$0 \$0 \$29,082 0914100200 SWITCHGEAR INST, INCL SWBD, PANELS & CIRC BKR, 400 AMPS 50.36 273 1.00 EACH 1099.80 Unit values 2731.70 0.00 0.00 3831.50 Totals 50.36 \$2,732 \$1,100 \$0 \$0 \$3,832 A09 ELECTRICAL 602 \$19,733 \$13,181 \$0 \$0 \$32,914

	=======================================	=======	======	=======	=======	========
Line #	Description	on				
=======================================	Manhours	Matl	Labor	Equipment	Sub	Total
	: = = = = = = = = = = = = = = = = = = =	:======				
0205541750						
Unit values Totals	0.10 1.90	0.00 \$0	1.73 \$35	2.50 \$50	0.00	4.23
0205543200						L.F.
Unit values Totals	0.15 150.00	0.00 \$0			0.00	3.68
0207183600	HVAC DEMO,	MECH EQPT	T HEAVY I	TEM	1 00	Ton
0207183600 Unit values Totals	14.55	0.00	314.87	0.00 \$0	0.00	314.87
0208400600					700000	\ T 🗔
Unit values Totals	0.07 71.00	0.00 \$0	1.63 \$1,634	0.20 \$196	0.00	1.83
0208401000	ם משתשאגדת	TDE			125 00	ነ ፑኋ
Unit values Totals	0.20 25.00	0.00	4.60 \$574	0.56 \$70	0.00	5.16 5.44
0222540060	EXCAV TREN	ICH, COMMO	ON EARTH,	1'-4' DEEP	, 1/2 15 00) C V
0222540060 Unit values Totals	0.08	0.00	1.47 \$22	1.17 \$17	0.00	2.64
0222541900	TAMPING TR	ENCH B'FI	LL, VIBR	ATING PLATE	, ADD) C.Y.
Unit values Totals	0.09 1.34	0.00 \$0	1.44 \$22	0.55 \$8	0.00	1.99
0222543020	BACKFILL T BUCKET, MI		E.LOADER	, WHEEL MTD) C.Y.
Unit values Totals	0.03 0.45	0.00	0.58 \$9		0.00	1.06
0251040380	ASPHALTIC COURSE, 2"		PAVEMENT	, PAVING, W) S.Y.
Unit values Totals	0.02 0.30	2.96 \$59	0.27 \$5		0.00	3.48

Line #	Description						
	Manhours	Matl	Labor	Equipment	Sub	Total	
=========	========						
U02 SITEWORK	266	\$59	\$5,229	\$1,417	\$0	\$6,705	
0331305010	6" THICK	SLAB FOR	NEW TRANS	SFORMER	48.00	S F	
Unit values Totals	0.02 1.15	1.45 \$70	0.28 \$13	0.00 \$0	0.00	1.73 \$83	
U03 CONCRETE	2	\$70	\$13	\$0	\$0	\$83	

Line #	Description						
	Manhours	Matl	Labor	Equipment	Sub	Total	
	=======	========	======			=========	
1554512050	HTG INFRA	RED ELEC	6KW 20478	BBTU	5.00	T a	
Unit values Totals			44.47 \$222	0.00 \$0	0.00	379.13 \$1,895	
1554512100	HTG INFRA	RED ELEC	13.5KW 46	5075.5BTU	E 00	n-	
Unit values Totals		455.20 \$2,276		0.00 \$0	5.00 0.00 \$0		
1554512150	HTG INFRA	RED ELEC	27KW 9215	51BTU		•	
Unit values Totals	4.00 48.00	879.31 \$10,552	66.55 \$799	0.00 \$0		945.86 \$11,351	
1574205220	ELECTRIC	THERMOSTAT	r w/ cover	R AND WIRING		_	
Unit values Totals		74.93 \$1,648	20.81 \$458	0.00 \$0		95.74 \$2,106	
U15 MECHANICAL	100	\$16,149	\$1,745	\$0	\$0	\$17,894	

Line #	Descript	ion				
	Manhours	Matl		quipment		Total
	======		. = = = = = = = = =			
1611400600	MINERAL	INSULATED	CABLE 600V	1 #4	2 00	C.L.F.
Unit values Totals	6.67 13.33	402.81 \$806	103.21 \$206	0.00 \$0	0.00	506.02 \$1,012
1611400800	MINERAL :	INSULATED	CABLE 600V	1 #2	4 00	
Unit values Totals	7.27 29.09	537.08 \$2,148	112.80 \$451	0.00 \$0	0.00	C.L.F. 649.88 \$2,599
1621100220	OUTLET BO	OXES STEEL	, 4" SQ, 2-	1/8" DEEP,		Π-
Unit values Totals	0.40	2.36 \$52	6.20 \$136	0.00 \$0	22.00 0.00 \$0	8.57
1621100250	OUTLET BO	OX STEEL 4	" COVERS BL	ANK	22.00	Π-
Unit values Totals			1.94 \$43			
1631200100	HEATING S	SYSTEM POW	ER / CONTRO	L PANEL	4 00	_
Unit values Totals	2.96 11.85	320.72 \$1,283	45.97 \$184	0.00 \$0	4.00 0.00 \$0	366.69 \$1,467
1641600300	TRANSFORM	MER OIL PA	D 15KV 480V	3P500KVA		_
Unit values Totals			775.50 \$776		1.00 0.00 \$0	12681.78 \$12,682
1671104800	UNDERGROU	ND DUCT B	ANK PVC TYP	E EB 4 - 2		
Unit values Totals	0.13 26.60	1.48 \$296	2.07 \$414	0.00 \$0	200.00 0.00 \$0	3.55 \$710
U16 ELECTRICAL	143	\$16,357	\$2,210	\$146	\$0	\$18,713

•	=======================================	=======	========	=======	========	========	=======
	Line #	Descripti	on				
		Manhours	Matl	Labor	Equipment	Sub	Total
	=======================================		=======				
	ESTIMATE TOTAL	1113	\$52,368	\$22,378	\$1,563	\$0	\$76,309
	SALES TAX MATL MARKUP LABOR MARKUP	0.00% 0.00% 0.00%	\$0 \$0	\$0			
	EQUIPT MARKUP SUB MARKUP	0.00%		1.	\$0	\$0	
	TOTAL BEFORE CONTINGENCY BOND	ONTINGENC 10.00% 0.00%	\$52,368	\$22,378	\$1,563	\$0	\$76,309 \$7,631 \$0
	PROFIT	10.00%					\$7,631
	JOB TOTAL						\$91,571

Estimate: BLDG 3637 Date: 28-Nov-94
Description: ELECTRIC INFRARED HEATING SYSTEM COST ESTIMATE
Project: LIMITED EEAP(HGR) Bid Date:

Location: FORT BRAGG, N.C Job #: 94013.04

Sq. footage:	12000		City indx	:Raleigh, NC		
. =====================================	S	UMMARY				· · · · · · · · · · · · · · · · · · ·
	Manhours	Matl	Labor	Equipment	Sub	Total
=======================================	=======				========	=======
A09 ELECTRICAL U02 SITEWORK U03 CONCRETE U15 MECHANICAL U16 ELECTRICAL	602 266 2 100 143	\$19,733 \$59 \$70 \$16,149 \$16,357	\$13,181 \$5,229 \$13 \$1,745 \$2,210	\$0 \$1,417 \$0 \$0 \$146	\$0 \$0 \$0 \$0 \$0	\$32,914 \$6,705 \$83 \$17,894 \$18,713
TOTAL	1113	\$52,368	\$22,378	\$1,563	\$0	\$76,309
SALES TAX MATL MARKUP LABOR MARKUP EQUIPT MARKUP SUB MARKUP	0.00% 0.00% 0.00% 0.00% 0.00%	\$0 \$0	\$0	\$0	\$0	
TOTAL BEFORE CO CONTINGENCY BOND PROFIT	ONTINGENC 10.00% 0.00% 10.00%	\$52,368	\$22,378	\$1,563	\$0	\$76,309 \$7,631 \$0 \$7,631
JOB TOTAL						\$91,571

ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID FY95 (92) INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3 PROJECT NO. & TITLE: 94013.04 LES: ECO3 - ELECTRIC INFRARED HEAT FISCAL YEAR 95 DISCRETE PORTION NAME: ECO ANALYSIS DATE: 12-05-94 ECONOMIC LIFE 20 YEARS PREPARED BY: G.B. LOFLIN 1. INVESTMENT A. CONSTRUCTION COST 144029. B. SIOH 7201. C. DESIGN COST \$ 7201.
D. TOTAL COST (1A+1B+1C) \$ 158431. E. SALVAGE VALUE OF EXISTING EQUIPMENT \$ F. PUBLIC UTILITY COMPANY REBATE
G. TOTAL INVESTMENT (1D - 1E - 1F) Ο. 158431. 2. ENERGY SAVINGS (+) / COST (-) DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1994 UNIT COST SAVINGS ANNUAL \$ DISCOUNT DISCOUNTED FUEL \$/ MWH(1) MWH/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5) -210. 1021. 0. 0. 0. -7336. 19578. A. ELECT \$ 34.95 B. DIST \$ 19.18 15.08 -110632. 19578. 18.57 363563. \$ 195/8. \$ 0. \$ 0. \$ 0. \$ -29484. C. RESID \$.00 D. NAT G \$ 13.44 21.02 0. 18.58 0. E. COAL \$.00 F. PPG \$.00 16.83 0. 17.38 M. DEMAND SAVINGS 14.88 -438722. 811. \$ -17242. N. TOTAL -185791. 3. NON ENERGY SAVINGS (+) / COST (-) \$ 14.88 A. ANNUAL RECURRING (+/-) 1043. (1) DISCOUNT FACTOR (TABLE A) (2) DISCOUNTED SAVING/COST (3A X 3A1) \$ 15521. B. NON RECURRING SAVINGS(+) / COSTS(-) SAVINGS(+) YR DISCNT COST(-) OC FACTR DISCNT DISCOUNTED ITEM SAVINGS(+)/ (1) COST(-)(4) (2) (3) d. TOTAL 0. C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)\$ 15521. 4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))\$ -16199. 5. SIMPLE PAYBACK PERIOD (1G/4) -9.78 YEARS 6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) \$ -170270. 7. SAVINGS TO INVESTMENT RATIO (SIR) = (6 / 1G) = -1.07(IF < 1 PROJECT DOES NOT QUALIFY) *** Project does not qualify for ECIP funding; 4,5,6 for information only. 8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): N/A

LIFE CYCLE COST ANALYSIS SUMMARY

PAGE 9-43

STUDY: 3642EC03

Date: 28-Nov-94 Estimate: BLDG 3642 Description: ELECTRIC INFRARED HEATING SYSTEM COST ESTIMATE Project: LIMITED EEAP(HGR) Bid Date: FORT BRAGG, N.C Job #: 94013.04 Location: City indx:Raleigh, NC Sq. footage: 19500 -Line # Description -Manhours Matl Labor Equipment Sub Total ______ FEEDER INSTALLATION, INCLUDING CONDUIT AND 0913100280 WIRE, 200 AMPERES 3000.00 L.F. 6.71 Unit values 0.31 9.45 0.00 0.00 16.16 918.00 \$28,336 \$20,135 Totals \$0 \$0 \$48,471 0914100240 SWITCHGEAR INST, INCL SWBD, PANELS & CIRC BKR, 600 AMPERES 68.07 6574.60 1494.60 68.07 \$6,575 \$1,495 1.00 EACH Unit values 0.00 0.00 8069.20 Totals \$0 \$0 \$8,070 A09 ELECTRICAL 987 \$34,911 \$21,630 \$0 \$0 \$56,541

Line #	Description	on				
				Equipment		
***********		=======				=======
0205541750					30 00	S.Y.
Unit values Totals		0.00 \$0	1.73 \$52	2.50 \$75	0.00 \$0	4.23 \$127
0205543200	/ !! DT XMETI	סיב			1600 00	L.F.
Unit values Totals	0.15 240.00	0.00 \$0	2.61 \$4,180	1.06 \$1,702	0.00 \$0	3.68 \$5,882
0207183600	HVAC DEMO	MECH EQP	T HEAVY I	rem	1 50	Ton
Unit values Totals	14.55 21.82	0.00 \$0	314.87 \$472	0.00 \$0	0.00	314.87 \$472
0208400600						
Unit values Totals	0.07 99.40	0.00 \$0	1.63 \$2,287	0.20 \$274	0.00	1.83 \$2,561
0208401000	REMOVE INS	SULATION	FROM PIPE	FITTING, UP	P TO 4"	Ea.
Unit values Totals	0.20	0.00 \$0	4.60 \$735	0.56 \$90	0.00 \$0	5.16 \$825
0222540060	רע הפאר/דד	שחשום לפו	-	•	1 = 00	С. Ү.
Unit values Totals	0.08	0.00 \$0	1.47 \$22	1.17 \$17	0.00	2.64
0222541900	TAMPING TF	RENCH B'F			15 00	CV
Unit values Totals			1.44 \$22	0.55 \$8	0.00	1.99
0222543020	BACKFILL T BUCKET, MI		.E.LOADER,	WHEEL MTD.	, 1CY 15.00	СУ
Unit values Totals	0.03	0.00	0.58 \$9		0.00	1.06 \$16
0251040380	ASPHALTIC COURSE, 2"		PAVEMENT,	PAVING, WE	ARING 30.00	SY
Unit values Totals	0.02 0.45	2.96 \$89			0.00	3.48

Line #	Description						
	Manhours	Matl	Labor	Equipment	Sub	Total	
=======================================	========	=======					
U02 SITEWORK	400	\$89	\$7,787	\$2,180	\$0	\$10,056	
0331305010	6" THICK	SLAB FOR	NEW TRAN	SFORMER	48.00	SF	
Unit values Totals	0.02 1.15	1.45 \$70	0.28	0.00 \$0	0.00	1.73 \$83	
U03 CONCRETE	2	\$70	\$13	\$0	\$0	\$83	

Line #	Descripti	on 				
	Manhours	Matl	Labor	Equipment	Sub	Total
	======	=======	=======			
1554512050	HTG INFRA	RED ELEC	6KW 20478	BBTU	5.00	Fa
Unit values Totals		334.67 \$1,673		0.00 \$0	0.00	379.13 \$1,895
1554512100	HTG INFRA	RED ELEC	13.5KW 46	6075.5BTU		·
Unit values Totals		455.20 \$2,276		0.00 \$0		Ea. 508.44 \$2,542
1554512150	HTG INFRA	RED ELEC	27KW 9215	51BTU		
Unit values Totals		879.31 \$17,586				Ea. 945.86 \$18,917
1574205220	ELECTRIC	THERMOSTAT	r w/ cover	R AND WIRING		
Unit values Totals	1.00 30.00	74.93 \$2,248			30.00 0.00 \$0	Ea. 95.74 \$2,872
U15 MECHANICAL	140	\$23,783	\$2,443	\$0	\$0	\$26,226

Line #	Description								
=======================================	Manhours			Equipment	Sub	Total			
		=======			=======				
1611400600	MINERAL	INSULATED (CABLE 600	V 1 #4	2 50	C.L.F.			
Unit values Totals	6.67 16.67	402.81 \$1,007	103.21 \$258	0.00 \$0	0.00	506.02			
1611400800	MINERAL	INSULATED (CABLE 600	V 1 #2	F 00	C.L.F.			
Unit values Totals	7.27 36.37	537.08 \$2,685	112.80 \$564		0.00	649.88			
1621100220	OUTLET B	OXES STEEL	, 4" SQ, 2	-1/8" DEEP,		E o			
Unit values Totals	0.40	2.36 \$71	6.20 \$186		30.00 0.00 \$0				
1621100250	OUTLET BO	OX STEEL 4'	" COVERS B	LANK	30.00	n-			
Unit values Totals	0.13 3.75	0.54 \$16	1.94 \$58	0.00 \$0	0.00	2.48			
1631200100	HEATING :	SYSTEM POWE	ER / CONTR	OL PANEL	7.00	D-			
Unit values Totals	2.96 20.74	320.72 \$2,245	45.97 \$322	0.00 \$0	7.00 0.00 \$0	366.69 \$2,567			
1641600500	TRANSFORI	MER OIL PAI	15KV 480	V 3P1000KVA	1 00	77-			
Unit values Totals	76.92 76.92	17408.80 \$17,409	1184.40 \$1,184	225.60 \$226	1.00 0.00 \$0				
1671104800	UNDERGROU	JND DUCT BA	NK PVC TY	PE EB 4 - 2'		T 17			
Unit values Totals	0.13 33.25	1.48 \$370	2.07 \$517	0.00 \$0	250.00 0.00 \$0	3.55 \$887			
U16 ELECTRICAL	200	\$23,803	\$3,089	\$226	\$0	\$27,118			

Line #	Description								
	Manhours	Matl	Labor	Equipment	Sub	Total			
		:=======	=====:	==========					
ESTIMATE TOTAL	1729	\$82,656	\$34,962	\$2,406	\$0	\$120,024			
SALES TAX MATL MARKUP LABOR MARKUP	0.00% 0.00% 0.00%	\$0 \$0	\$0						
EQUIPT MARKUP SUB MARKUP	0.00%		ŞŪ	\$0	\$0				
TOTAL BEFORE C CONTINGENCY BOND	ONTINGENC 10.00% 0.00%	\$82,656	\$34,962	\$2,406	\$0	\$120,024 \$12,002 \$0			
PROFIT	10.00%					\$12,002			
JOB TOTAL						\$144,029			

Estimate: BLDG 3642 Date: 28-Nov-94

Description: ELECTRIC INFRARED HEATING SYSTEM COST ESTIMATE

Project: LIMITED EEAP(HGR) Bid Date:

Location: FORT BRAGG, N.C Job #: 94013.04 Sq. footage: 19500 City indx:Raleigh, NC

SUMMARY Manhours Matl Labor Equipment Sub Total ______ 987 A09 ELECTRICAL \$34,911 \$21,630 \$0 \$0 \$56,541 \$7,787 U02 SITEWORK 400 \$89 \$2,180 \$0 \$10,056 \$70 \$13 U03 CONCRETE 2 \$0 \$0 \$83 \$2,443 \$26,226 U15 MECHANICAL \$23,783 140 \$0 \$0 \$23,803 \$3,089 U16 ELECTRICAL 200 \$226 \$0 \$27,118 TOTAL 1729 \$82,656 \$34,962 \$2,406 \$0 \$120,024 SALES TAX 0.00% \$0 0.00% \$0 MATL MARKUP LABOR MARKUP 0.00% \$0 EQUIPT MARKUP 0.00% \$0 \$0 SUB MARKUP 0.00% TOTAL BEFORE CONTINGENC \$82,656 \$34,962 \$2,406 \$0 \$120,024 CONTINGENCY 10.00% \$12,002 0.00% BOND \$0 PROFIT 10.00% \$12,002 JOB TOTAL \$144,029

```
LIFE CYCLE COST ANALYSIS SUMMARY STUDY: 3807ECO3
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID FY95 (92)
ALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3
    INSTALLATION & LOCATION: FORT BRAGG
    PROJECT NO. & TITLE: 94013.04 LES: ECO3 - ELECTRIC INFRARED HEAT
    FISCAL YEAR 95 DISCRETE PORTION NAME: ECO
    ANALYSIS DATE: 12-05-94 ECONOMIC LIFE 20 YEARS PREPARED BY: G.B. LOFLIN
    1. INVESTMENT
    A. CONSTRUCTION COST
                                    214760.
                                $
                                    10738.
    B. SIOH
    C. DESIGN COST
                                $
                                     10738.
    D. TOTAL COST (1A+1B+1C) $ 236236.
    E. SALVAGE VALUE OF EXISTING EQUIPMENT $
                                                     0.
    F. PUBLIC UTILITY COMPANY REBATE
    G. TOTAL INVESTMENT (1D - 1E - 1F)
                                                                236236.
    2. ENERGY SAVINGS (+) / COST (-)
    DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1994
                 UNIT COST SAVINGS ANNUAL $ DISCOUNT
                                                                      DISCOUNTED
        FUEL.
                 $/ MWH(1)
                             MWH/YR(2) SAVINGS(3) FACTOR(4)
                                                                      SAVINGS(5)
                              -288.
1941
        A. ELECT $ 34.95
B. DIST $ 19.18
C. RESID $ .00
D. NAT G $ 13.44
                                              -10059.
                                                             15.08
                                                                         -151689.
                                               37359.
                                                             18.57
                                                                          693764.
                               0.
                                                     0.
                                                             21.02
                                                                               0.
                                  0.
0.
0.
                                                             18.58
                                                                               ٥.
                                                     0.
                                                     0.
                                                                               0.
        E. COAL $ .00
                                                             16.83
                                           $ 0.
$ -47522.
$ -20222.
                     .00
        F. PPG $
                                                                               0.
                                                             17.38
        M. DEMAND SAVINGS
                                                            14.88
                                                                         -707127.
                                1660.
        N. TOTAL
                                                                         -165053.
    3. NON ENERGY SAVINGS(+) / COST(-)
       A. ANNUAL RECURRING (+/-)
                                                                      $
                                                                            300.
           (1) DISCOUNT FACTOR (TABLE A)
                                                            14.88
           (2) DISCOUNTED SAVING/COST (3A X 3A1)
                                                                           4464.
       B. NON RECURRING SAVINGS(+) / COSTS(-)
                                 SAVINGS(+) YR
                                                    DISCNT
                                                                DISCOUNTED
                                                    FACTR
                   ITEM
                                   COST(-)
                                               OC
                                                                SAVINGS(+)/
                                       (1)
                                              (2)
                                                     (3)
                                                                COST(-)(4)
        d. TOTAL
                                         0.
                                                                        0.
       C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)$ 4464.
    4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))$ -19922.
   5. SIMPLE PAYBACK PERIOD (1G/4)
                                                                       -11.86 YEARS
   6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C)
                                                                      $ -160589.
    7. SAVINGS TO INVESTMENT RATIO
                                             (SIR) = (6 / 1G) =
                                                                -.68
       (IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.
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LIFE CYCLE COST ANALYSIS SUMMARY

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR):

N/A

STUDY: 3807ECO3

_________ 28-Nov-94 Estimate: BLDG 3807 Date: Description: ELECTRIC INFRARED HEATING SYSTEM COST ESTIMATE Project: LIMITED EEAP(HGR) Bid Date: Location: FORT BRAGG, N.C Sq. footage: 31586 Job #: 94013.04 City indx:Raleigh, NC Line # Description Manhours Matl Labor Equipment Sub Total ______ FEEDER INSTALLATION, INCLUDING CONDUIT AND 0913100280 WIRE, 200 AMPERES 4000.00 L.F. 6.71 Unit values 0.31 9.45 0.00 0.00 16.16 Totals 1224.00 \$37,781 \$26,846 \$0 \$0 \$64,627 0914100360 SWITCHGEAR INST, INCL SWBD, PANELS & CIRC BKR, 1600 AMPERES 208.17 13519.60 1.00 EACH 4568.40 \$4.568 Unit values 0.00 0.00 18088.00 208.17 \$13,520 Totals \$4,568 \$0 \$0 \$18,088 A09 ELECTRICAL 1433 \$51,301 \$31,414 \$0 \$0 \$82,715

==========	========			========		========
Line #	Description	on				
	Manhours			Equipment		Total
		======	========			
0205541750	PAVEMENT I	REMOVAL,	BITUMINOUS	, 4" TO 6"		C. V
Unit values Totals	0.10 3.80	0.00 \$0	1.73 \$69	2.50 \$100	40.00 0.00 \$0	4.23
0205543200	SITE REMOV	מי			4000 00	T. F
Unit values Totals	0.15 600.00	0 00	2.61 \$10,450	1.06 \$4,255	0.00	3.68
0207183600	HVAC DEMO	MECH EQP	T HEAVY IT			
Unit values Totals	14.55 29.09	0.00 \$0	314.87 \$630	0.00		Ton 314.87 \$630
0208400600	REMOVE PI	PE INSULA	TION UP TO	4" DIAMETE		
Unit values Totals	0.07 284.00	0.00 \$0	1.63 \$6,536	0.20 \$783		1.83 \$7,319
0208401000 Unit values Totals	REMOVE INS DIAMETER I 0.20 100.00	0.00		FITTING, UP 0.56 \$281	500.00	
0222540060	EXCAV TREN	ICH, COMM	ON EARTH,	1'-4' DEEP,		
Unit values Totals	CY TRAC/LI 0.08 2.00	0.00 \$0		1.17 \$29	25.00 0.00 \$0	2.64 \$66
0222541900	TAMPING TR	RENCH B'F	ILL, VIBRA	TING PLATE,		
Unit values Totals	0.09 2.23	0.00 \$0	1.44 \$36	0.55 \$14	25.00 0.00 \$0	C.Y. 1.99 \$50
0222543020			.E.LOADER,	WHEEL MTD.		a v
Unit values Totals	BUCKET, MI 0.03 0.75	0.00 \$0	0.58 \$14	0.48 \$12	25.00 0.00 \$0	1.06 \$26
0251040380			PAVEMENT,	PAVING, WE		0.37
Unit values Totals	COURSE, 2" 0.02 0.60	2.96 \$118	0.27 \$11	0.25 \$10	40.00 0.00 \$0	3.48 \$139

=======================================								
Line #	Description	on						
	Manhours	Matl	Labor	Equipment	Sub	Total		
===========	========			=======	=======			
U02 SITEWORK	1023	\$118	\$20,081	\$5,484	\$0	\$25,683		
0331305010	6" THICK	SLAB FOR	NEW TRANS	SFORMER	48.00	c F		
Unit values Totals	0.02 1.15	1.45 \$70	0.28 \$13	0.00 \$0	0.00	1.73 \$83		
U03 CONCRETE	2	\$70	\$13	\$0	\$0	\$83		

				===========		
Line #	Description	on				
	Manhours	Matl	Labor	Equipment	Sub	Total
=======================================	========	=======			======	=======
1554512050	HTG INFRA	RED ELEC	6KW 2047	8BTU		
Unit values Totals	2.67 18.67	334.67 \$2,343	44.47 \$311	0.00 \$0	7.00 0.00 \$0	Ea. 379.13 \$2,654
1554512100	HTG INFRA	RED ELEC	13.5KW 4	6075.5BTU		
Unit values Totals	3.20 22.40	455.20 \$3,186	53.24 \$373	0.00 \$0	7.00 0.00 \$0	Ea. 508.44 \$3,559
1554512150	HTG INFRA	RED ELEC	27KW 921	51BTU		
Unit values Totals	4.00 132.00	879.31 \$29,017	66.55 \$2,196	0.00 \$0	33.00 0.00 \$0	945.86
1574205220	ELECTRIC :	THERMOSTAT	r w/ covei	R AND WIRING		
Unit values Totals	1.00	74.93 \$2,997	20.81 \$832	0.00	40.00 0.00 \$0	Ea. 95.74 \$3,829
U15 MECHANICAL	214	\$37,543	\$3,712	\$0	\$0	\$41,255

Line #	Descript	ion				
	Manhours		Labor Ed		Sub	Total
	========	=========	=========		======	=======
1611400600	MINERAL	INSULATED (CABLE 600V	1 #4	3 00	C.L.F.
Unit values Totals	6.67 20.00	402.81 \$1,208	103.21 \$310	0.00 \$0	0.00	506.02 \$1,518
1611400800	MINERAL	INSULATED (CABLE 600V	1 #2	6.00	
Unit values Totals	7.27 43.64	537.08 \$3,222	112.80 \$677		0.00	C.L.F. 649.88 \$3,899
1621100220	OUTLET B	OXES STEEL,	4" SQ, 2-1	l/8" DEEP,		Π-
Unit values Totals	0.40 16.00	2.36 \$94	6.20 \$248	0.00 \$0	40.00 0.00 \$0	8.57 \$342
1621100250	OUTLET B	OX STEEL 4'	' COVERS BLA	<i>Y</i> NK	40.00	E-a
Unit values Totals	0.13 5.00	0.54 \$21	1.94 \$78	0.00 \$0	0.00	2.48 \$99
1631200100	HEATING	SYSTEM POWE	ER / CONTROL	J PANEL	10.00	T)-
Unit values Totals	2.96 29.63		45.97 \$460	0.00 \$0	0.00	366.69 \$3,667
1641600500	TRANSFOR	MER OIL PAI	15KV 480V	3P1000KVA		_
Unit values Totals	76.92 76.92	17408.80 \$17,409	1184.40 \$1,184	225.60 \$226	1.00 0.00 \$0	
1671104800	UNDERGRO	UND DUCT BA	NK PVC TYPE	EB 4 - 2'		
Unit values Totals	0.13 33.25	1.48 \$370	2.07 \$517	0.00 \$0	250.00 0.00 \$0	3.55 \$887
U16 ELECTRICAL	225	\$25,531	\$3,474	\$226	\$0	\$29,231

					=======	
Line #	Descript:	ion				
	Manhours	Matl	Labor	Equipment	Sub	Total
=======================================	========					
ESTIMATE TOTAL	2897	\$114,563	\$58,694	\$5,710	\$0	\$178,967
SALES TAX MATL MARKŲP	0.00%	\$0 \$0				
LABOR MARKUP EQUIPT MARKUP SUB MARKUP	0.00% 0.00% 0.00%		\$0	\$0	\$0	
CONTINGENCY BOND	ONTINGENC 10.00% 0.00%	\$114,563	\$58,694	\$5,710	\$0	\$178,967 \$17,897 \$0
PROFIT	10.00%					\$17,897
JOB TOTAL						\$214,760

Estimate: BLDG 3807 Date: 28-Nov-94
Description: ELECTRIC INFRARED HEATING SYSTEM COST ESTIMATE
Project: LIMITED EEAP(HGR) Bid Date:
Location: FORT BRAGG, N. C Job #: 94013.04
Sq. footage: 31586 City indx:Raleigh, NC

sq. rootage.	31300					
. =====================================	========	SUMMARY				=======
	Manhours	Matl	Labor	Equipment	Sub	Total
	=======	=======		=======	=======	=======
A09 ELECTRICAL U02 SITEWORK U03 CONCRETE U15 MECHANICAL U16 ELECTRICAL	1023 2 214	\$51,301 \$118 \$70 \$37,543 \$25,531	\$20,081 \$13 \$3,712	\$5,484 \$0	\$0 \$0 \$\$ \$\$ \$\$	\$82,715 \$25,683 \$83 \$41,255 \$29,231
TOTAL	2897	\$114,563	\$58,694	\$5,710	\$0	\$178,967
SALES TAX MATL MARKUP LABOR MARKUP EQUIPT MARKUP SUB MARKUP	0.00% 0.00% 0.00% 0.00% 0.00%	\$0 \$0	\$0	\$0	\$0	
TOTAL BEFORE CO CONTINGENCY BOND PROFIT	ONTINGENC 10.00% 0.00% 10.00%	\$114,563	\$58,694	\$5,710	\$0	\$178,967 \$17,897 \$0 \$17,897
JOB TOTAL						\$214,760

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LIFE CYCLE COST ANALYSIS SUMMARY
                                                            STUDY: 3954EC03
    ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) INSTALLATION & LOCATION: FORT BRAGG REGION NOS.
                                                            LCCID FY95 (92)
                                            REGION NOS. 4 CENSUS: 3
    PROJECT NO. & TITLE: 94013.04 LES: ECO3 - ELECTRIC INFRARED HEAT
    FISCAL YEAR 95 DISCRETE PORTION NAME: ECO
    ANALYSIS DATE:
                    12-05-94 ECONOMIC LIFE 20 YEARS PREPARED BY: G.B. LOFLIN
    1. INVESTMENT
                                   105584.
    A. CONSTRUCTION COST
                               $
    B. SIOH
                                     5279.
                               $
                                     5279.
    C. DESIGN COST
    D. TOTAL COST (1A+1B+1C) $
                                 116142.
    E. SALVAGE VALUE OF EXISTING EQUIPMENT $
                                                  . 0.
    F. PUBLIC UTILITY COMPANY REBATE
                                                     0.
    G. TOTAL INVESTMENT (1D - 1E - 1F)
                                                              116142.
    2. ENERGY SAVINGS (+) / COST (-)
    DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1994
                 UNIT COST SAVINGS ANNUAL $ DISCOUNT
                                                                    DISCOUNTED
        FUEL
                 $/ MWH(1)
                             MWH/YR(2)
                                           SAVINGS(3) FACTOR(4) SAVINGS(5)
       A. ELECT $ 34.95
B. DIST $ 19.18
                                               -4002.
                              -115.
                                                            15.08
                                                                        -60357.
                                900.
                                               17258.
                                                            18.57
                                                                        320484.
       C. RESID $ .00
D. NAT G $ 13.44
                                 Ο.
                                                            21.02
                                                  0.
                                                                             0.
                                0.

0.

0.

$

0.

$

785.
                                                   0.
                                                                             0.
                                                           18.58
       E. COAL $ .00
F. PPG $ .00
                                                           16.83
                                                   Ο.
                                                                             0.
                                              0.
-24975.
                                                           17.38
                                                                             0.
       M. DEMAND SAVINGS
                                                                       -371628.
                                                            14.88
       N. TOTAL
                                              -11719.
                                                                       -111501.
    3. NON ENERGY SAVINGS(+) / COST(-)
       A. ANNUAL RECURRING (+/-)
                                                                    $
                                                                         3081.
           (1) DISCOUNT FACTOR (TABLE A)
                                                          14.88
           (2) DISCOUNTED SAVING/COST (3A X 3A1)
                                                                         45848.
       B. NON RECURRING SAVINGS(+) / COSTS(-)
                                 SAVINGS(+) YR
COST(-) OC
                                                   DISCNT
                                                              DISCOUNTED
                                                   FACTR
                   ITEM
                                                              SAVINGS(+)/
                                      (1)
                                             (2)
                                                   (3)
                                                              COST(-)(4)
       d. TOTAL
                                        0.
                                                                      0.
      C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)$ 45848.
   4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))$
   5. SIMPLE PAYBACK PERIOD (1G/4)
                                                                     -13.45 YEARS
   6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C)
                                                                    $ -65653.
   7. SAVINGS TO INVESTMENT RATIO
                                            (SIR) = (6 / 1G) =
       (IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.
   8. ADJUSTED INTERNAL RATE OF RETURN (AIRR):
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N/A

Estimate: BLDG 3954 Date: 28-Nov-94
Description: ELECTRIC INFRARED HEATING SYSTEM COST ESTIMATE Project: LIMITED EEAP(HGR) Bid Date:
Location: FORT BRAGG, N.C Job #: 94013.04
Sq. footage: 19500 City indx:Raleigh, NC Line # Description Manhours Matl Labor Equipment Sub Total 0913100280 FEEDER INSTALLATION, INCLUDING CONDUIT AND WIRE, 200 AMPERES 0.31 9.45 6.71 0.00 612.00 \$18,890 \$13,423 \$0 2000.00 L.F. 0.00 16.16 Unit values \$0 \$32,313 Totals SWITCHGEAR INST, INCL SWBD, PANELS & CIRC 0914100200 1.00 EACH BKR, 400 AMPS 50.36 2731.70 1099.80 0.00 50.36 \$2,732 \$1,100 \$0 0.00 3831.50 Unit values \$0 \$3,832 Totals A09 ELECTRICAL 663 \$21,622 \$14,523 \$0 \$0 \$36,145

=======================================	=======================================		=======	========	=======	
Line #	Descripti	on				
	Manhours			Equipment		Total
=======================================	========	=======				
0205541750	PAVEMENT :	REMOVAL,			30.00	S.Y.
Unit values Totals		0.00 \$0	1.73 \$52	2.50 \$75	0.00	4.23
0205543200	SITE REMO					L.F.
Unit values Totals		0.00	2.61 \$4,180	1.06 \$1,702	0.00	3.68 \$5,882
0207183600	HVAC DEMO	, MECH EQP	T HEAVY IT	EM	1.50	Ton
Unit values Totals	14.55 21.82	0.00 \$0	314.87 \$472	0.00 \$0	0.00	314.87 \$472
0208400600	REMOVE PI	PE INSULA	TION UP TO	4" DIAMETE	ER PIPE 1400.00	T 17
Unit values Totals	0.07 99.40		1.63 \$2,287		0.00	
0208401000		T T T T			7 (0 0 0	Po.
Unit values Totals	DIAMETER 0.20 32.00	0.00 \$0	4.60 \$735	0.56 \$90	0.00	5.16
0222540060	EXCAV TRE	NCH, COMM	ON EARTH,	1'-4' DEEP	1/2	C V
Unit values Totals	0.08 1.20	0.00	1.47 \$22	1.17 \$17	0.00	2.64 \$39
0222541900	TAMPING T	RENCH B'F	ILL, VIBRA	TING PLATE,	ADD	a v
Unit values Totals	0.09 1.34	0.00 \$0	1.44 \$22	0.55 \$8	15.00 0.00 \$0	1.99 \$30
0222543020			.E.LOADER,	WHEEL MTD	, 1CY 15.00	C V
Unit values Totals	BUCKET, M 0.03 0.45	0.00 \$0	0.58 \$9	0.48 \$7	0.00	1.06
0251040380			PAVEMENT,	PAVING, WE	EARING 30.00	c v
Unit values Totals	COURSE, 2 0.02 0.45	2.96 \$89	0.27 \$8	0.25 \$7	0.00	3.48 \$104

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Line #	Description	on				
	Manhours	Matl	Labor	Equipment	Sub	Total
=======================================		========				
U02 SITEWORK	400	\$89	\$7,787	\$2,180	\$0	\$10,056
0331305010	6" THICK	SLAB FOR	NEW TRANS	SFORMER	48.00	S F
Unit values Totals	0.02 1.15	1.45 \$70	0.28 \$13	0.00 \$0	0.00	1.73 \$83
U03 CONCRETE	2	\$70	\$13	\$0	\$0	\$83

=======================================	=======		=======	========	======	
Line #	Descripti	ion				
	Manhours	Matl	Labor	Equipment	Sub	Total
				t dans were four four four mire than you were four own who		
1554512150	HTG INFRA	A RED ELEC	27KW 9215	1BTU	20.00	E-1
Unit values Totals	4.00 80.00	879.31 \$17,586	66.55 \$1,331	0.00 \$0	0.00	945.86 \$18,917
1574205220	ELECTRIC	THERMOSTAT	W/ COVER	AND WIRING		
Unit values Totals	1.00	74.93 \$1,499	20.81 \$416	0.00	20.00 0.00 \$0	Ea. 95.74 \$1,915
U15 MECHANICAL	100	\$19,085	\$1,747	\$0	\$0	S20.832

Line #	Descripti	on				
	Manhours	Matl		Equipment	Sub	Total
	=======================================	:=======		=======	======	
1611400600	MINERAL]	NSULATED (CABLE 600V	J 1 #4	2 50	C.L.F.
Unit values Totals	6.67 16.67	402.81 \$1,007	103.21 \$258	0.00 \$0	0.00	506.02 \$1,265
1611400800	MINERAL I	NSULATED (CABLE 600V	J 1 #2	F 00	
Unit values Totals	7.27 36.37	537.08 \$2,685	112.80 \$564		0.00 \$0	C.L.F. 649.88 \$3,249
1621100220	OUTLET BO	XES STEEL,	4" SQ, 2-	-1/8" DEEP,		D -
Unit values Totals	0.40 8.00	2.36 \$47	6.20 \$124		20.00 0.00 \$0	8.57 \$171
1621100250	OUTLET BO	X STEEL 4"	COVERS BI	LANK	20.00	E o
Unit values Totals	0.13 2.50	0.54 \$11	1.94 \$39	0.00 \$0	0.00	2.48 \$50
1631200100	HEATING S	YSTEM POWE	R / CONTRO	L PANEL	7.00	D-
Unit values Totals	2.96 20.74	320.72 \$2,245	45.97 \$322	0.00 \$0	7.00 0.00 \$0	366.69 \$2,567
1641600300	TRANSFORM	ER OIL PAD	15KV 480V	7 3P500KVA		_
Unit values Totals	50.00 50.00	11760.20 \$11,760	775.50 \$776	146.08 \$146	1.00 0.00 \$0	
1671104800	UNDERGROU	ND DUCT BA	NK PVC TYP	PE EB 4 - 2'		T 19
Unit values Totals	0.13 33.25	1.48 \$370	2.07 \$517		250.00 0.00 \$0	3.55 \$887
U16 ELECTRICAL	168	\$18,125	\$2,600	\$146	\$0	\$20,871

_==========	=======	========				
Line #	Descripti	on				
	Manhours	Matl	Labor	Equipment	Sub	Total
	========		= = = = = = = = = :	========		
ESTIMATE TOTAL	1333	\$58,991	\$26,670	\$2,326	\$0	\$87,987
SALES TAX MATL MARKUP LABOR MARKUP	0.00% 0.00% 0.00%	\$0 \$0	\$0			
EQUIPT MARKUP SUB MARKUP	0.00%	-	7.5	\$0	\$0	
CONTINGENCY	ONTINGENC 10.00%	\$58,991	\$26,670	\$2,326	\$0	\$87,987 \$8,799
BOND PROFIT	0.00% 10.00%					\$0 \$8,799
JOB TOTAL						\$105,584

Estimate: BLDG 3954 Date: 28-Nov-94

Description: ELECTRIC INFRARED HEATING SYSTEM COST ESTIMATE
Project: LIMITED EEAP(HGR) Bid Date:
Location: FORT BRAGG, N.C Job #: 94013.04 Location: FORT BRAGG, N.C Job #: 94013.04 Sq. footage: 19500 City indx:Raleigh City indx:Raleigh, NC

	S	UMMARY				
	Manhours	Matl	Labor	Equipment	Sub	Total
	=======================================		=========			======
A09 ELECTRICAL U02 SITEWORK U03 CONCRETE U15 MECHANICAL U16 ELECTRICAL	663 400 2 100 168	\$21,622 \$89 \$70 \$19,085 \$18,125	\$14,523 \$7,787 \$13 \$1,747 \$2,600	\$0 \$2,180 \$0 \$0 \$146	\$ \$ \$ \$ \$ \$ \$ \$ \$	\$36,145 \$10,056 \$83 \$20,832 \$20,871
TOTAL	1333	\$58,991	\$26,670	\$2,326	\$0	\$87,987
SALES TAX MATL MARKUP LABOR MARKUP EQUIPT MARKUP SUB MARKUP	0.00% 0.00% 0.00% 0.00% 0.00%	\$0 \$0	\$0	\$0	\$0	
	0.00% ONTINGENC 10.00% 0.00%	\$58,991	\$26,670	\$2,326	\$0	\$87,987 \$8,799 \$0 \$8,799
JOB TOTAL						\$105,584

LIFE CYCLE COST ANALYSIS SUMMARY

ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP)

INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3 PROJECT NO. & TITLE: 94013.04 LES: ECO3 - ELECTRIC INFRARED HEAT FISCAL YEAR 95 DISCRETE PORTION NAME: ECO ANALYSIS DATE: 12-13-94 ECONOMIC LIFE 20 YEARS PREPARED BY: G.B. LOFLIN 1. INVESTMENT A. CONSTRUCTION COST \$ 144029. B. SIOH 7201. C. DESIGN COST 7201. D. TOTAL COST (1A+1B+1C) \$ 158431. E. SALVAGE VALUE OF EXISTING EQUIPMENT \$ F. PUBLIC UTILITY COMPANY REBATE G. TOTAL INVESTMENT (1D - 1E - 1F) 158431. 2. ENERGY SAVINGS (+) / COST (-) DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1994 UNIT COST SAVINGS ANNUAL \$ DISCOUNT \$/ MWH(1) MWH/YR(2) SAVINGS(3) FACTOR(4) DISCOUNTED FUEL FACTOR(4) SAVINGS(5) A. ELECT \$ 34.95 B. DIST \$ 19.18 C. RESID \$.00 -178. 953. -6206. 15.08 -93582. 178. 953. 0. 0. 0. 18286. 18.57 339575. \$ 0. \$ 0. \$ 0. \$ 0. \$ -29484. \$ -17404. Ο. 21.02 0. D. NAT G \$ 13.44 0. 18.58 0. E. COAL \$.00 F. PPG \$.00 Ο. 16.83 0. Ο. 17.38 0. M. DEMAND SAVINGS 14.88 -438722. 776. N. TOTAL -192729. 3. NON ENERGY SAVINGS(+) / COST(-) A. ANNUAL RECURRING (+/-) \$ 4950. (1) DISCOUNT FACTOR (TABLE A) 14.88 (2) DISCOUNTED SAVING/COST (3A X 3A1) 73660. B. NON RECURRING SAVINGS(+) / COSTS(-) DISCNT DISCOUNTED SAVINGS(+)/ SAVINGS(+) YR COST(-) ITEM OC (1) (2) (3) COST(-)(4) d. TOTAL 0. C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)\$ 73660. 4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))\$ -12453. 5. SIMPLE PAYBACK PERIOD (1G/4) -12.72 YEARS 6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) \$ -119069. 7. SAVINGS TO INVESTMENT RATIO (SIR) = (6 / 1G) =(IF < 1 PROJECT DOES NOT QUALIFY) **** Project does not qualify for ECIP funding; 4,5,6 for information only. 8. ADJUSTED INTERNAL RATE OF RETURN (AIRR):

N/A

A09 ELECTRICAL 987 \$34,911

\$0 \$56,541

Estimate: BLDG 3962 28-Nov-94 Date: Description: ELECTRIC INFRARED HEATING SYSTEM COST ESTIMATE Project: LIMITED EEAP(HGR) Bid Date: FORT BRAGG, N.C Job #: 94013.04 Location: Sq. footage: 19500 City indx:Raleigh, NC Line # Description ______ Manhours Matl Labor Equipment Sub Total _______ 0913100280 FEEDER INSTALLATION, INCLUDING CONDUIT AND WIRE, 200 AMPERES 3000.00 L.F. 6.71 Unit values 0.31 9.45 0.00 0.00 16.16 \$28,336 \$20,135 Totals 918.00 \$0 \$0 \$48,471 0914100240 SWITCHGEAR INST, INCL SWBD, PANELS & CIRC BKR, 600 AMPERES 1.00 EACH Unit values 68.07 6574.60 1494.60 0.00 0.00 8069.20 Totals 68.07 \$6,575 \$1,495 \$0 \$0 \$8,070

\$21,630

\$0

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Line #	Description	n				
	Manhours			Equipment		Total
	=======================================	======	=======		======	=======
0205541750	PAVEMENT F	REMOVAL,	BITUMINOUS	S, 4" TO 6"	THICK 30.00	g v
Unit values Totals			1.73 \$52	2.50 \$75	0.00	
0205543200	SITE REMOV					ı. F
Unit values Totals			2.61 \$4,180	1.06 \$1,702	0.00	3.68
0207183600	HVAC DEMO,	MECH EQP	T HEAVY I	rem	1.50	mo»
Unit values Totals	14.55 21.82		314.87 \$472	0.00 \$0	0.00	314.87
0208400600	REMOVE PIF	E INSULA	TION UP TO	0 4" DIAMET	ER PIPE 1400.00	
Unit values Totals	0.07 99.40	0.00 \$0	1.63 \$2,287	0.20 \$274	0.00	1.83 \$2,561
0208401000	REMOVE INS	T 17 17		FITTING, U	7.60.00	₽ ₂
Unit values Totals	0.20 32.00	0.00	4.60 \$735	0.56 \$90	0.00	5.16 \$825
0222540060	EXCAV TREN	CH, COMM	ON EARTH,	1'-4' DEEP,	1/2 15.00	CV
Unit values Totals	0.08	0.00		1.17 \$17	0.00	2.64 \$39
0222541900	TAMPING TR	ENCH B'F	ILL, VIBRA	ATING PLATE,	ADD	CV
Unit values Totals	0.09 1.34	0.00 \$0	1.44	0.55 \$8	15.00 0.00 \$0	
0222543020	BACKFILL T BUCKET, MI		.E.LOADER,	WHEEL MTD.	, 1CY 15.00	CV
Unit values Totals	0.03 0.45	0.00 \$0	0.58 \$9	0.48 \$7	0.00	1.06 \$16
0251040380	ASPHALTIC COURSE, 2"		PAVEMENT,	PAVING, WE	EARING 30.00	c v
Unit values Totals	0.02 0.45	2.96 \$89	0.27 \$8	0.25 \$7	0.00	3.48 \$104

Line #	Description	on				
	Manhours	Matl	Labor	Equipment	Sub	Total
U02 SITEWORK	400	\$89	\$7,787	\$2,180	\$0	\$10,056
0331305010	6" THICK	SLAB FOR	NEW TRANS	SFORMER	4.9.00	с п
Unit values Totals	0.02 1.15	1.45 \$70	0.28 \$13	0.00 \$0	48.00 0.00 \$0	1.73 \$83
U03 CONCRETE	2	\$70	\$13	\$0	\$0	\$83

Line #	Descripti	on				
	Manhours	Matl	Labor	Equipment	Sub	Total
		========	======	=======================================		=======
1554512050	HTG INFRA	RED ELEC	6KW 2047	8BTU	F 00	Ti-
Unit values Totals	2.67 13.34		44.47 \$222	0.00 \$0	5.00 0.00 \$0	
1554512100	HTG INFRA	RED ELEC	13.5KW 4	6075.5BTU	F 00	Do.
Unit values Totals	3.20 16.00		53.24 \$266		5.00 0.00 \$0	
1554512150	HTG INFRA	RED ELEC	27KW 921	51BTU	20.00	П-
Unit values Totals		879.31 \$17,586		0.00 \$0		945.86 \$18,917
1574205220	ELECTRIC	THERMOSTA:	r w/ cover	R AND WIRING	20.00	77-
Unit values Totals		74.93 \$2,248	20.81 \$624			95.74 \$2,872
U15 MECHANICAL	140	\$23,783	\$2,443	\$0	\$0	\$26,226

Line #	Description	on				
	Manhours	Matl		Equipment	Sub	Total
	========	=======	=======			
1611400600	MINERAL II	NSULATED C	ABLE 600	V 1 #4	2 50	C.L.F.
Unit values Totals	6.67 16.67	402.81 \$1,007	103.21 \$258	0.00 \$0	0.00 \$0	506.02 \$1,265
1611400800	MINERAL II	NSULATED C	ABLE 600	V 1 #2	5 00	
Unit values Totals	7.27 36.37	537.08 \$2,685	112.80 \$564	0.00 \$0	0.00 \$0	C.L.F. 649.88 \$3,249
1621100220	OUTLET BOX	KES STEEL,	4" SQ, 2	-1/8" DEEP,		D-
Unit values Totals	0.40 12.00	2.36 \$71	6.20 \$186	0.00 \$0	30.00 0.00 \$0	8.57 \$257
1621100250	OUTLET BOX	K STEEL 4"	COVERS BI	LANK	30.00	P-1
Unit values Totals	0.13 3.75	0.54 \$16	1.94 \$58	0.00 \$0	0.00	2.48 \$74
1631200100	HEATING SY	STEM POWE	R / CONTRO	OL PANEL	7.00	n-
Unit values Totals	2.96 20.74	320.72 \$2,245	45.97 \$322	0.00 \$0	7.00 0.00 \$0	366.69 \$2,567
1641600500	TRANSFORME	ER OIL PAD	15KV 480V	/ 3P1000KVA		n -
Unit values Totals	76.92 1 76.92	.7408.80 \$17,409	1184.40 \$1,184	225.60 \$226	1.00 0.00 \$0	
1671104800	UNDERGROUN	ID DUCT BA	NK PVC TY	PE EB 4 - 2		T 17
Unit values Totals	0.13 33.25	1.48 \$370	2.07 \$517	0.00 \$0	250.00 0.00 \$0	3.55 \$887
U16 ELECTRICAL	200	\$23,803	\$3,089	\$226	\$0	\$27,118

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Line #	Descripti	.on				
	Manhours	Matl	Labor	Equipment	Sub	Total
	:=======	=======	=======		:=======	
ESTIMATE TOTAL	1729	\$82,656	\$34,962	\$2,406	\$0	\$120,024
SALES TAX	0.00%	\$0 \$0				
MATL MARKUP LABOR MARKUP	0.00% 0.00%	\$0	\$0			
EQUIPT MARKUP SUB MARKUP	0.00% 0.00%			\$0	\$0	
TOTAL BEFORE C	CONTINGENC	\$82,656	\$34,962	\$2,406	\$0	\$120,024
CONTINGENCY BOND	10.00%	4027000	¥31,732	42,100	40	\$12,002
PROFIT	10.00%					\$12,002
JOB TOTAL						\$144,029

JOB TOTAL

Estimate: BLDG 3962 Date: 28-Nov-94

Description: ELECTRIC INFRARED HEATING SYSTEM COST ESTIMATE Project: LIMITED EEAP(HGR) Bid Date:

FORT BRAGG, N.C Job #: 94013.04 City indx:Raleigh, NC Location: Sq. footage: 19500

54. 2000050						
=======================================	S	UMMARY				
	Manhours	Matl	Labor	Equipment	Sub	Total
=======================================	=======	=======	======:	========	========	========
A09 ELECTRICAL U02 SITEWORK U03 CONCRETE U15 MECHANICAL U16 ELECTRICAL	987 400 2 140 200	\$34,911 \$89 \$70 \$23,783 \$23,803	\$21,630 \$7,787 \$13 \$2,443 \$3,089	\$0 \$2,180 \$0 \$0 \$226	\$0 \$0 \$\$ \$\$ \$\$	\$56,541 \$10,056 \$83 \$26,226 \$27,118
TOTAL	1729	\$82,656	\$34,962	\$2,406	\$0	\$120,024
SALES TAX MATL MARKUP LABOR MARKUP EQUIPT MARKUP SUB MARKUP	0.00% 0.00% 0.00% 0.00% 0.00%	\$0 \$0	\$0	\$0	\$0	
TOTAL BEFORE CONTINGENCY BOND PROFIT	ONTINGENC 10.00% 0.00% 10.00%	\$82,656	\$34,962	\$2,406	\$ 0	\$120,024 \$12,002 \$0 \$12,002

\$144,029

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LIFE CYCLE COST ANALYSIS SUMMARY STUDY: 4137ECO3
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID FY95 (92)
                LIFE CYCLE COST ANALYSIS SUMMARY
    INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3
    PROJECT NO. & TITLE: 94013.04 LES: ECO3 - ELECTRIC INFRARED HEAT
    FISCAL YEAR 95 DISCRETE PORTION NAME: ECO
    ANALYSIS DATE: 12-05-94 ECONOMIC LIFE 20 YEARS PREPARED BY: G.B. LOFLIN
    1. INVESTMENT
    A. CONSTRUCTION COST $
B. SIOH $
C. DESIGN COST $
                                         91571.
    B. SIOH $ 4579.
C. DESIGN COST $ 4579.
D. TOTAL COST (1A+1B+1C) $ 100729.
    E. SALVAGE VALUE OF EXISTING EQUIPMENT $
F. PUBLIC UTILITY COMPANY REBATE $
G. TOTAL INVESTMENT (1D - 1E - 1F)
                                                             Ο.
                                                                         100729.
    2. ENERGY SAVINGS (+) / COST (-)
    DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1994
                  UNIT COST SAVINGS ANNUAL $ DISCOUNT DISCOUNTED $/MWH(1) MWH/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5)
         FUEL
                                   -128. $ -4461.

820. $ 15725.

0. $ 0.

0. $ 0.

0. $ 0.

0. $ 0.

0. $ 0.

692. $ -19494.
                                                     -4461.
         A. ELECT $ 34.95
B. DIST $ 19.18
C. RESID $ .00
D. NAT G $ 13.44
                                                                      15.08
                                                                                    -67277.
                                                                    18.57
                                                                                     292022.
                                                                                         0.
                                                                     21.02
                                                                    18.58 $ 16.83 $ 17.38 $ 14.88 $
                                                                                          0.
         E. COAL $ .00
F. PPG $ .00
                                                                                          0.
                                                                                $ 0.
$ -290071.
         M. DEMAND SAVINGS
         N. TOTAL
                                                                                    -65326.
    3. NON ENERGY SAVINGS (+) / COST (-)
        A. ANNUAL RECURRING (+/-)
            (1) DISCOUNT FACTOR (TABLE A)
                                                                  14.88 $ 22899.
                                                                                     1539.
             (2) DISCOUNTED SAVING/COST (3A X 3A1)
        B. NON RECURRING SAVINGS (+) / COSTS (-)
                                      SAVINGS(+) YR DISCNT DISCOUNTED
COST(-) OC FACTR SAVINGS(+)/
(1) (2) (3) COST(-)(4)
                                        COST(-) OC (1) (2)
                       ITEM
                                                                        COST(-)(4)
         d. TOTAL
                                      $ 0.
        C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)$ 22899.
    4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))$ -6691.
    5. SIMPLE PAYBACK PERIOD (1G/4)
                                                                                -15.05 YEARS
    6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C)
                                                                                $ -42427.
                                                   (SIR) = (6 / 1G) =
    7. SAVINGS TO INVESTMENT RATIO
        (IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.
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8. ADJUSTED INTERNAL RATE OF RETURN (AIRR):

N/A

______ Estimate: BLDG 4137 28-Nov-94 Date: Description: ELECTRIC INFRARED HEATING SYSTEM COST ESTIMATE LIMITED EEAP(HGR) Bid Date: Project: FORT BRAGG, N.C Job #: 94013.04 Location: Sq. footage: 12000 City indx:Raleigh, NC . Description _____ Manhours Matl Labor Equipment Sub Total ______ 0913100280 FEEDER INSTALLATION, INCLUDING CONDUIT AND WIRE, 200 AMPERES 1800.00 L.F. 6.71 0.31 9.45 0.00 0.00 16.16 Unit values \$17,001 \$12,081 Totals 550.80 \$0 \$0 \$29,082 SWITCHGEAR INST, INCL SWBD, PANELS & CIRC 0914100200 BKR, 400 AMPS 50.36 273 1.00 EACH Unit values 2731.70 1099.80 0.00 0.00 3831.50 Totals 50.36 \$2,732 \$1,100 \$0 \$0 \$3,832 602 \$19,733 \$13,181 A09 ELECTRICAL \$0 \$0 \$32,914

	========			========	=======	=========
Line #	Description	on				
	Manhours			Equipment		Total
	=======	======				
0205541750	PAVEMENT I	REMOVAL, I	BITUMINOUS	, 4" TO 6"		S.Y.
Unit values Totals	0.10			2.50 \$50	0.00	
0205543200	SITE REMOV				7000 00	т. 🖫
Unit values Totals	0.15	0.00	2.61 \$2,613	1.06 \$1,064	0.00	3.68
0207183600	HVAC DEMO	MECH EQP	r heavy it:	EM	1.00	Ton
Unit values Totals	14.55 14.55	0.00 \$0	314.87 \$315	0.00 \$0	0.00	314.87 \$315
0208400600	REMOVE PI	PE INSULAT	rion up to	4" DIAMETE	R PIPE 1000.00	T. 17
Unit values Totals	0.07 71.00			0.20 \$196	0.00	1.83
0208401000	REMOVE INS		FROM PIPE	FITTING, UF	TO 4"	Ψa
Unit values Totals	0.20 25.00	0.00	4.60 \$574	0.56 \$70	0.00	5.16
0222540060	EXCAV TREN	NCH, COMMO	ON EARTH,	1'-4' DEEP,	1/2 15.00	C V
Unit values Totals	0.08			1.17 \$17	0.00	2.64
0222541900	TAMPING TR	RENCH B'F	LL, VIBRA	ring plate,	ADD 15.00	CV
Unit values Totals	0.09 1.34	0.00 \$0	1.44 \$22	0.55 \$8	0.00	1.99
0222543020	BACKFILL T BUCKET, MI		E.LOADER,	WHEEL MTD.	, 1CY 15.00	CV
Unit values Totals	0.03 0.45	0.00	0.58 \$9	0.48 \$7	0.00	1.06
0251040380	ASPHALTIC COURSE, 2"		PAVEMENT,	PAVING, WE	ARING 20.00	s v
Unit values Totals	0.02 0.30	2.96 \$59	0.27 \$5	0.25 \$5	0.00	3.48 \$69

Line #	Description					
	Manhours	Matl	Labor	Equipment	Sub	Total
U02 SITEWORK	266	\$59	\$5,229	\$1,417	\$0	\$6,705
0331305010	6" THICK	SLAB FOR	NEW TRANS	SFORMER		
Unit values	0.02	1.45	0.28	0.00	48.00	S.F. 1.73
Totals	1.15	\$70	\$13	\$0	\$0	\$83
U03 CONCRETE	2	\$70	\$13	\$0	\$0	\$83

1554512050 HTG INFRA RED ELEC 6KW 20478BTU Unit values 2.67 334.67 44.47 0.00 0.00 5 Totals 13.34 \$1,673 \$222 \$0 \$0 \$0 1554512100 HTG INFRA RED ELEC 13.5KW 46075.5BTU Unit values 3.20 455.20 53.24 0.00 0.00 5 Totals 16.00 \$2,276 \$266 \$0 \$0 1554512150 HTG INFRA RED ELEC 27KW 92151BTU Unit values 4.00 879.31 66.55 0.00 0.00 5 Totals 48.00 \$10,552 \$799 \$0 \$0 1574205220 ELECTRIC THERMOSTAT W/ COVER AND WIRING Unit values 1.00 74.93 20.81 0.00 0.00		
1554512050 HTG INFRA RED ELEC 6KW 20478BTU Unit values 2.67 334.67 44.47 0.00 0.00 3 Totals 13.34 \$1,673 \$222 \$0 \$0 \$0 1554512100 HTG INFRA RED ELEC 13.5KW 46075.5BTU Unit values 3.20 455.20 53.24 0.00 0.00 5 Totals 16.00 \$2,276 \$266 \$0 \$0 1554512150 HTG INFRA RED ELEC 27KW 92151BTU Unit values 4.00 879.31 66.55 0.00 0.00 5 Totals 48.00 \$10,552 \$799 \$0 \$0 \$1 1574205220 ELECTRIC THERMOSTAT W/ COVER AND WIRING Unit values 1.00 74.93 20.81 0.00 0.00		
Unit values 2.67 334.67 44.47 0.00 0.00 5.00 Ea. Totals 13.34 \$1,673 \$222 \$0 \$0 \$0 \$0 1554512100 HTG INFRA RED ELEC 13.5KW 46075.5BTU Unit values 3.20 455.20 53.24 0.00 0.00 5.00 5.00 5.00 5.00 5.00 5.0	tal	
Unit values 2.67 334.67 44.47 0.00 0.00 5.00 Ea. Totals 13.34 \$1,673 \$222 \$0 \$0 \$0 \$0 1554512100 HTG INFRA RED ELEC 13.5KW 46075.5BTU Unit values 3.20 455.20 53.24 0.00 0.00 5.00 5.00 5.00 5.00 5.00 5.0		
Unit values 2.67 334.67 44.47 0.00 0.00 50 50 50 50 50 50 50 50 50 50 50 50 5		
Unit values 3.20 455.20 53.24 0.00 0.00 50.00 50.00 50.00 50.00 50 50 50 50 50 50 50 50 50 50 50 50 5	79.13 1,895	
Unit values 3.20 455.20 53.24 0.00 0.00 50 50 50 50 50 50 50 50 50 50 50 50 5		
Unit values 4.00 879.31 66.55 0.00 0.00 5 Totals 48.00 \$10,552 \$799 \$0 \$0 \$1 1574205220 ELECTRIC THERMOSTAT W/ COVER AND WIRING Unit values 1.00 74.93 20.81 0.00 0.00	08.44 2,542	
Unit values 4.00 879.31 66.55 0.00 0.00 9 Totals 48.00 \$10,552 \$799 \$0 \$0 \$1 1574205220 ELECTRIC THERMOSTAT W/ COVER AND WIRING Unit values 1.00 74.93 20.81 0.00 0.00		
22.00 Ea. Unit values 1.00 74.93 20.81 0.00 0.00		
Unit_values 1.00 74.93 20.81 0.00 0.00		
	95.74 2,106	
U15 MECHANICAL 100 \$16,149 \$1,745 \$0 \$0 \$1	7,894	

		=======				========
Line #	Descript	ion				
	Manhours	Matl		Equipment	Sub	Total
	=======	=======				
1611400600	MINERAL	INSULATED (CABLE 600	V 1 #4	2 00	C.L.F.
Unit values Totals	6.67 13.33	402.81 \$806	103.21 \$206	0.00	0.00	506.02
1611400800	MINERAL	INSULATED (CABLE 600	V 1 #2	4 00	C.L.F.
Unit values Totals	7.27 29.09	537.08 \$2,148	112.80 \$451	0.00 \$0		649.88
1621100220	OUTLET BOK.O.'S	OXES STEEL,	4" SQ, 2	-1/8" DEEP	, 1" 22.00	E'o
Unit values Totals	0.40	2.36 \$52	6.20 \$136	0.00 \$0	0.00	8.57
1621100250	OUTLET BO	OX STEEL 4'	COVERS B	LANK	22.00	E-
Unit values Totals	0.13 2.75	0.54 \$12	1.94 \$43	0.00 \$0	0.00	2.48 \$55
1631200100	HEATING S	SYSTEM POWE	er / contr	OL PANEL	4.00	E.
Unit values Totals	2.96 11.85	320.72 \$1,283	45.97 \$184	0.00 \$0	0.00 \$0	366.69 \$1,467
1641600300	TRANSFORM	MER OIL PAI	15KV 480	V 3P500KVA	1.00	T.
Unit values Totals	50.00 50.00	11760.20 \$11,760	775.50 \$776	146.08 \$146	0.00	12681.78 \$12,682
1671104800	UNDERGROU	JND DUCT BA	NK PVC TY	PE EB 4 -	2" DIA 200.00	T To
Unit values Totals	0.13 26.60	1.48 \$296	2.07 \$414		0.00	3.55 \$710
U16 ELECTRICAL	143	\$16,357	\$2,210	\$146	\$0	\$18,713

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Line #	Descripti	.on				
	Manhours	Matl	Labor	Equipment	Sub	Total
ESTIMATE TOTAL	և 1113	\$52,368	\$22,378	\$1,563	\$0	\$76,309
SALES TAX MATL MARKUP LABOR MARKUP	0.00% 0.00% 0.00%	\$0 \$0	\$0			
EQUIPT MARKUP SUB MARKUP	0.00%		ΨV	\$0	\$0	
TOTAL BEFORE (CONTINGENCY BOND	CONTINGENC 10.00%	\$52,368	\$22,378	\$1,563	\$0	\$76,309 \$7,631
PROFIT	0.00% 10.00%					\$0 \$7,631
JOB TOTAL						\$91,571

Estimate: BLDG 4137 Date: 28-Nov-94
Description: ELECTRIC INFRARED HEATING SYSTEM COST ESTIMATE
Project: LIMITED EEAP(HGR) Bid Date:
Location: FORT BRAGG, N.C Job #: 94013.04
Sq. footage: 12000 City indx:Raleigh, NC

SUMMARY

SUMMARI						
	Manhours	Matl	Labor	Equipment	Sub	Total
=======================================			======		:=====::	=======
A09 ELECTRICAL U02 SITEWORK U03 CONCRETE U15 MECHANICAL U16 ELECTRICAL	602 266 2 100 143	\$19,733 \$59 \$70 \$16,149 \$16,357	\$13,181 \$5,229 \$13 \$1,745 \$2,210	\$0 \$1,417 \$0 \$0 \$146	\$\$\$\$\$ \$\$\$\$\$\$	\$32,914 \$6,705 \$83 \$17,894 \$18,713
TOTAL	1113	\$52,368	\$22,378	\$1,563	\$0	\$76,309
SALES TAX MATL MARKUP LABOR MARKUP EQUIPT MARKUP SUB MARKUP	0.00% 0.00% 0.00% 0.00%	\$0 \$0	\$0	\$0	\$0	
TOTAL BEFORE COCONTINGENCY BOND PROFIT	ONTINGENC 10.00% 0.00% 10.00%	\$52,368	\$22,378	\$1,563	\$0	\$76,309 \$7,631 \$0 \$7,631
JOB TOTAL						\$91,571

ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID FY95 (92) INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3 PROJECT NO. & TITLE: 94013.04 LES: ECO3 - ELECTRIC INFRARED HEAT FISCAL YEAR 95 DISCRETE PORTION NAME: ECO 12-05-94 ECONOMIC LIFE 20 YEARS PREPARED BY: G.B. LOFLIN ANALYSIS DATE: 1. INVESTMENT A. CONSTRUCTION COST 58682. 2934. B. SIOH C. DESIGN COST \$
D. TOTAL COST (1A+1B+1C) \$ 2934. 64550. E. SALVAGE VALUE OF EXISTING EQUIPMENT \$ 0. F. PUBLIC UTILITY COMPANY REBATE Ο. \$ G. TOTAL INVESTMENT (1D - 1E - 1F) 64550. 2. ENERGY SAVINGS (+) / COST (-) DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1994 UNIT COST SAVINGS ANNUAL \$ DISCOUNT DISCOUNTED FUEL \$/ MWH(1) MWH/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5) A. ELECT \$ 34.95 B. DIST \$ 19.18 C. RESID \$.00 D. NAT G \$ 13.44 -55. -1919. 15.08 -28940. \$ 563. 10806. 18.57 200675. Ο. \$ 0. 21.02 0. 0. 0. 18.58 ٥. 0. E. COAL \$.00 Ο. 16.83 0. .00 F. PPG \$ Ο. 0. 17.38 0. M. DEMAND SAVINGS -8741. 14.88 -130066. N. TOTAL 509. 146. 41669. 3. NON ENERGY SAVINGS(+) / COST(-) A. ANNUAL RECURRING (+/-)\$ 3621. (1) DISCOUNT FACTOR (TABLE A) 14.88 (2) DISCOUNTED SAVING/COST (3A X 3A1) 53876. B. NON RECURRING SAVINGS(+) / COSTS(-) SAVINGS(+) YR DISCNT DISCOUNTED ITEM SAVINGS(+)/ FACTR (2) (1)(3) COST(-)(4)d. TOTAL \$ 0. 0. C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)\$ 53876. 4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))\$ 3767. 5. SIMPLE PAYBACK PERIOD (1G/4) 17.14 YEARS 6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) \$ 95544. 7. SAVINGS TO INVESTMENT RATIO (SIR) = (6 / 1G) =1.48 (IF < 1 PROJECT DOES NOT QUALIFY) **** Project does not qualify for ECIP funding; 4,5,6 for information only. 8. ADJUSTED INTERNAL RATE OF RETURN (AIRR):

LIFE CYCLE COST ANALYSIS SUMMARY

N/A

STUDY: 4242EC03

Estimate: BLDG 4242 Date: 28-Nov-94

Description: ELECTRIC INFRARED HEATING SYSTEM COST ESTIMATE LIMITED EEAP(HGR) Bid Date:

Project: Location:

Job #:

94013.04

Location: FORT BRAGG, N.C Sq. footage: 6000

City indx:Raleigh, NC

Line #

Description

	Manhours M	Matl I	Labor E	Equipment	Sub	Total
0913100280	FEEDER INSTA WIRE, 200 AM	•	INCLUDIN	G CONDUIT	AND 1000.00	т. 🖻
Unit values	0.31		6.71	0.00		16.16

Totals	306.00	\$9,445	\$6,712	\$0	\$0	\$16,157
0914100200	SWITCHGEAR BKR, 400 A	•	ICL SWBD,	PANELS & CIRC	1.00	EACH
Unit values Totals	50.36 50.36	2731.70 \$2,732	1099.80 \$1,100	0.00 \$0	0.00	3831.50 \$3,832

A09 ELECTRICAL 357 \$12,177 \$7,812 \$0 \$0 \$19,989

	========	=======	========	========		=======
Line #	Descripti	on				
	Manhours	Matl	Labor	Equipment	Sub	Total
	======	=======	======:		:======	
0205541750	PAVEMENT	REMOVAL,	BITUMINOUS	S, 4" TO 6"	THICK 20.00	S.Y.
Unit values Totals	0.10 1.90	0.00 \$0	1.73 \$35	2.50 \$50	0.00	4.23
0205543200	SITE REMO	ER			500.00	L.F.
Unit values Totals	0.15 75.00		2.61 \$1,306	1.06 \$532	0.00	
0207183600	HVAC DEMO	, MECH EQI	PT HEAVY I	rem		
Unit values Totals	14.55 7.27	0.00	314.87 \$157	0.00		314.87
0208400600	REMOVE PI	PE INSULA	ATION UP TO	0 4" DIAMETE		
Unit values Totals	0.07 35.50	0.00 \$0	1.63 \$817	0.20 \$98	500.00 0.00 \$0	L.F. 1.83 \$915
0208401000	REMOVE IN		FROM PIPE	FITTING, UF	TO 4"	Ea.
Unit values Totals	0.20 15.00	0.00 \$0	4.60 \$345	0.56 \$42	0.00 \$0	5.16
0222540060	EXCAV TRE			1'-4' DEEP,	1/2 15.00	C.Y.
Unit values Totals	0.08 1.20	0.00	1.47 \$22	1.17 \$17	0.00 \$0	2.64 \$39
0222541900	TAMPING T	RENCH B'F	FILL, VIBRA	ATING PLATE,		a
Unit values Totals	0.09 1.34	0.00 \$0	1.44 \$22	0.55 \$8	15.00 0.00 \$0	1.99 \$30
0222543020			F.E.LOADER,	WHEEL MTD.		a
Unit values Totals	BUCKET, M 0.03 0.45	0.00 \$0	0.58 \$9	0.48 \$7	15.00 0.00 \$0	1.06 \$16
0251040380	ASPHALTIC COURSE, 2		PAVEMENT,	PAVING, WE	ARING 20.00	c v
Unit values Totals	0.02 0.30	2.96 \$59	0.27 \$5	0.25 \$5	0.00	3.48 \$69

Line #	Descripti	on					
	Manhours	Matl	Labor	Equipment	Sub	Total	
			=======				
U02 SITEWORK	138	\$59	\$2,718	\$759	\$0	\$3,536	
0331305010	6" THICK	SLAB FOR	NEW TRAN	SFORMER	48.00	C 17	
Unit values Totals	0.02 1.15	1.45 \$70	0.28 \$13	0.00 \$0	0.00	1.73 \$83	
U03 CONCRETE	2	\$70	\$13	\$0	\$0	\$83	

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Line #	Description						
	Manhours	Matl	Labor	Equipment	Sub	Total	
	======						
1554512150	HTG INFRA	RED ELEC	27KW 9215	SIBTU	7.00	Fa.	
Unit values Totals	4.00 28.00	879.31 \$6,155	66.55 \$466	0.00 \$0	0.00	945.86 \$6,621	
1574205220	ELECTRIC	THERMOSTAT	W/ COVER	R AND WIRING	5 .00	D -	
Unit values Totals	1.00	74.93 \$524	20.81 \$146	0.00 \$0	7.00 0.00 \$0		
U15 MECHANICAL	35	\$6.679	\$612	\$0	\$0	\$7.291	

Line #	Descript	ion				
	Manhours		Labor Eq	 quipment	Sub	Total
	======	=======	========		======	========
1611400600	MINERAL	INSULATED	CABLE 600V	1 #4	0.00	
Unit values Totals	6.67 13.33	402.81 \$806	103.21 \$206	0.00 \$0	0.00 \$0	C.L.F. 506.02 \$1,012
1611400800	MINERAL	INSULATED	CABLE 600V	1 #2	4 00	
Unit values Totals	7.27 29.09	537.08 \$2,148	112.80 \$451	0.00 \$0	4.00 0.00 \$0	C.L.F. 649.88 \$2,599
1621100220	OUTLET BOK.O.'S	OXES STEEL	, 4" SQ, 2-1	L/8" DEEP,		Fo
Unit values Totals	0.40 2.80	2.36 \$17	6.20 \$43	0.00 \$0	7.00 0.00 \$0	8.57 \$60
1621100250	OUTLET B	OX STEEL 4	" COVERS BLA	NK	7.00	Ψo
Unit values Totals	0.13 0.88	0.54 \$4	1.94 \$14	0.00 \$0	0.00 \$0	2.48 \$18
1631200100	HEATING :	SYSTEM POW	ER / CONTROL	PANEL	3.00	Fo
Unit values Totals	2.96 8.89	320.72 \$962	45.97 \$138	0.00 \$0	0.00	366.69 \$1,100
1641600300	TRANSFORI	MER OIL PA	D 15KV 480V	3P500KVA	1 00	Π-
Unit values Totals	50.00 50.00	11760.20 \$11,760	775.50 \$776	146.08 \$146	1.00 0.00 \$0	
1671104800	UNDERGRO	UND DUCT B	ANK PVC TYPE	E EB 4 - 2		T 17
Unit values Totals	0.13 19.95	1.48 \$222	2.07 \$310		150.00 0.00 \$0	3.55 \$532
U16 ELECTRICAL	125	\$15,919	\$1,938	\$146	\$0	\$18,003

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Line #	Descripti	on		•		
	Manhours	Matl	Labor	Equipment	Sub	Total
=======================================	#==# = ===		========			
ESTIMATE TOTAL	657	\$34,904	\$13,093	\$905	\$0	\$48,902
SALES TAX MATL MARKUP LABOR MARKUP EQUIPT MARKUP	0.00% 0.00% 0.00% 0.00%	\$0 \$0	\$0	\$0		
SUB MARKUP	0.00%			γo	\$0	
TOTAL BEFORE C CONTINGENCY BOND PROFIT	ONTINGENC 10.00% 0.00% 10.00%	\$34,904	\$13,093	\$905	\$0	\$48,902 \$4,890 \$0 \$4,890
JOB TOTAL	20.000					\$58,682

Estimate: BLDG 4242 Date: 28-Nov-94

Description: ELECTRIC INFRARED HEATING SYSTEM COST ESTIMATE Project: LIMITED EEAP(HGR) Bid Date: Location: FORT BRAGG, N.C Job #: 94013.04

Sq. footage: 6000

City indx:Raleigh, NC

SUMMARY

	-					
	Manhours	Matl	Labor	Equipment	Sub	Total
=======================================	=======	======				
A09 ELECTRICAL U02 SITEWORK U03 CONCRETE U15 MECHANICAL U16 ELECTRICAL	357 138 2 35 125	\$12,177 \$59 \$70 \$6,679 \$15,919	\$7,812 \$2,718 \$13 \$612 \$1,938	\$0 \$759 \$0 \$0 \$146	\$0 \$0 \$0 \$0 \$0	\$19,989 \$3,536 \$83 \$7,291 \$18,003
TOTAL	657	\$34,904	\$13,093	\$905	\$0	\$48,902
SALES TAX MATL MARKUP LABOR MARKUP EQUIPT MARKUP SUB MARKUP	0.00% 0.00% 0.00% 0.00% 0.00%	\$0 \$0	\$0	\$0	\$0	
TOTAL BEFORE CONTINGENCY BOND PROFIT	ONTINGENC 10.00% 0.00% 10.00%	\$34,904	\$13,093	\$905	\$0	\$48,902 \$4,890 \$0 \$4,890
JOB TOTAL						\$58,682

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LIFE CYCLE COST ANALYSIS SUMMARY
                                                          STUDY: 7937EC03
       ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP)
                                                          LCCID FY95 (92)
  INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3
 PROJECT NO. & TITLE: 94013.04 LES: ECO3 - ELECTRIC INFRARED HEAT
 FISCAL YEAR 95 DISCRETE PORTION NAME: ECO
 ANALYSIS DATE: 12-05-94 ECONOMIC LIFE 20 YEARS PREPARED BY: G.B. LOFLIN
 1. INVESTMENT
 A. CONSTRUCTION COST $
                               197918.
                                9896.
                           $
 B. SIOH
 C. DESIGN COST
                                  9896.
 D. TOTAL COST (1A+1B+1C) $
                               217710.
 E. SALVAGE VALUE OF EXISTING EQUIPMENT $
                                                  0.
 F. PUBLIC UTILITY COMPANY REBATE
                                                   0.
 G. TOTAL INVESTMENT (1D - 1E - 1F)
                                                            217710.
 2. ENERGY SAVINGS (+) / COST (-)
 DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1994
              UNIT COST SAVINGS ANNUAL $ DISCOUNT DISCOUNTED $/ MWH(1) MWH/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5)
     FUEL
                             -445.
2615.
0.
                             -445. $ -15548.
2615. $ 50165.
0. $ 0.
0. $ 0.
0. $ 0.
0. $ 0.
2171. $ -54113.
     A. ELECT $ 34.95
                                           -15548.
                                                          15.08
                                                                     -234467.
     B. DIST $ 19.18
                                                         18.57
                                                                     931555.
                                                                       0.
     C. RESID $ .00
                                                         21.02
     D. NAT G $ 13.44
                                                         18.58
                                                                           0.
     E. COAL $ .00
F. PPG $ .00
M. DEMAND SAVINGS
                                                         16.83
                                                                           0.
                                                        17.38
                                                                           0.
                                                                  $ -805201.
                                           -54113.
                                                         14.88
                                                                  $ -108113.
     N. TOTAL
 3. NON ENERGY SAVINGS(+) / COST(-)
    A. ANNUAL RECURRING (+/-)
                                                                        2154.
         (1) DISCOUNT FACTOR (TABLE A)
                                                      14.88
                                                                  $ 32045.
         (2) DISCOUNTED SAVING/COST (3A X 3A1)
    B. NON RECURRING SAVINGS(+) / COSTS(-)
                              SAVINGS(+) YR DISCNT
COST(-) OC FACTR
                                                            DISCOUNTED
                                COST(-)
                 ITEM
                                                            SAVINGS(+)/
                                    (1)
                                           (2)
                                                 (3)
                                                            COST(-)(4)
     d. TOTAL
                               $
                                     0.
                                                                   Ο.
    C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)$ 32045.
 4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))$ -17343.
 5. SIMPLE PAYBACK PERIOD (1G/4)
                                                                   -12.55 YEARS
 6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C)
                                                                  $ -76069.
 7. SAVINGS TO INVESTMENT RATIO
                                         (SIR) = (6 / 1G) =
     (IF < 1 PROJECT DOES NOT QUALIFY)
** Project does not qualify for ECIP funding; 4,5,6 for information only.
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8. ADJUSTED INTERNAL RATE OF RETURN (AIRR):

PAGE 9-91

N/A

\$0 \$66,559

Estimate: BLDG 7937 Date: 28-Nov-94 Description: ELECTRIC INFRARED HEATING SYSTEM COST ESTIMATE Project: LIMITED EEAP(HGR) Bid Date:
Location: FORT BRAGG, N.C Job #: 94013.04
Sq. footage: 37842 City indx:Raleigh, NC Description ______ Manhours Matl Labor Equipment Sub Total ______ FEEDER INSTALLATION, INCLUDING CONDUIT AND 0913100280 WIRE, 200 AMPERES 3000.00 L.F. 6.71 0.00 0.00 16.16 Unit values 0.31 9.45 918.00 \$28,336 \$20,135 \$0 Totals \$0 \$48,471 0914100360 SWITCHGEAR INST, INCL SWBD, PANELS & CIRC BKR, 1600 AMPERES 1.00 EACH Unit values 208.17 13519.60 4568.40 0.00 0.00 18088.00 Totals 208.17 \$13,520 \$4,568 \$0 \$0 \$18,088

A09 ELECTRICAL 1127 \$41,856 \$24,703 \$0

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Line #	Descriptio	n				
	Manhours	Matl	Labor	Equipment	Sub	Total
# #####	=======================================	======			=======	
0205541750	PAVEMENT R	EMOVAL,	BITUMINOUS	, 4" TO 6"	THICK	S.Y.
Unit values Totals	0.10 3.80	0.00 \$0	1.73 \$69	2.50 \$100	0.00	
0205543200	SITE REMOV 4"DIAMETE					L.F.
Unit values Totals			2.61 \$7,838	1.06 \$3,191	0.00	3.68 \$11,029
0207183600	HVAC DEMO,	MECH EQP	r heavy it	EM	2 22	
Unit values Totals				0.00 \$0		314.87
0208400600	REMOVE PIP	E INSULA	rion up to			T T
Unit values Totals	0.07 213.00	0.00 \$0	1.63 \$4,902	0.20 \$587	3000.00 0.00 \$0	1.83 \$5,489
0208401000	REMOVE INS DIAMETER P	TDF			400 00	Fa
Unit values Totals	0.20 80.00	0.00	4.60 \$1,838	0.56 \$225	0.00	5.16 \$2,063
0222540060	EXCAV TREN	CH, COMMO	ON EARTH,	1'-4' DEEP,	1/2 25.00	CV
Unit values Totals	0.08	0.00	1.47 \$37	1.17 \$29	0.00	2.64
0222541900	TAMPING TR	ENCH B'F	ILL, VIBRA	TING PLATE,	ADD 25.00	C. V
Unit values Totals	0.09 2.23	0.00 \$0	1.44 \$36	0.55 \$14	0.00	
0222543020	BACKFILL T BUCKET, MI		.E.LOADER,	WHEEL MTD.	, 1CY 25.00	CV
Unit values Totals	0.03 0.75	0.00 \$0	0.58 \$14	0.48 \$12	0.00	1.06
0251040380	ASPHALTIC COURSE, 2"		PAVEMENT,	PAVING, WE	ARING 40.00	c v
Unit values Totals	0.02 0.60	2.96 \$118	0.27 \$11	0.25 \$10	0.00	3.48 \$139

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Line #	Description	on				
	Manhours	Matl	Labor	Equipment	Sub	Total
=========						
U02 SITEWORK	782	\$118	\$15,375	\$4,168	\$0	\$19,661
0331305010	6" THICK	SLAB FOR	NEW TRANS	SFORMER	48.00	C F
Unit values Totals	0.02 1.15	1.45 \$70	0.28 \$13	0.00 \$0	0.00	1.73
U03 CONCRETE	2	\$70	\$13	\$0	\$0	\$83

Line #	Descripti	on				
	Manhours	Matl	Labor	Equipment	Sub	Total
1554512050	HTG INFRA	RED ELEC	6KW 20478	BBTU	6.00	П-
Unit values Totals	2.67 16.00	334.67 \$2,008	44.47 \$267		0.00	379.13 \$2,275
1554512100	HTG INFRA	RED ELEC	13.5KW 46	6075.5BTU	6.00	m _o
Unit values Totals		455.20 \$2,731		0.00 \$0	0.00	
1554512150	HTG INFRA	RED ELEC	27KW 9215	51BTU	20.00	77 -
Unit values Totals		879.31 \$34,293				945.86 \$36,888
1574205220	ELECTRIC	THERMOSTA:	r w/ cover	R AND WIRING		•
Unit values Totals	1.00 51.00	74.93 \$3,821	20.81 \$1,061			95.74 \$4,882
U15 MECHANICAL	243	\$42,853	\$4,242	\$0	\$0	\$47,095

	======		========	=======	======	
Line #	Descript	ion				
	Manhours			quipment		Total
	======	=======	========	=======		
1611400600	MINERAL	INSULATED (CABLE 600V	1 #4	3 50	C.L.F.
Unit values Totals	6.67 23.33	402.81 \$1,410	103.21 \$361	0.00 \$0		506.02
1611400800	MINERAL	INSULATED (CABLE 600V	1 #2	7 00	C.L.F.
Unit values Totals	7.27 50.91	537.08 \$3,760	112.80 \$790	0.00 \$0	0.00	649.88 \$4,550
1621100220	OUTLET BOK.O.'S	OXES STEEL,	, 4" SQ, 2-	1/8" DEEP,		D-
Unit values Totals	0.40	2.36 \$120	6.20 \$316	0.00 \$0	51.00 0.00 \$0	8.57 \$436
1621100250	OUTLET B	OX STEEL 4'	' COVERS BL	ANK	F1 00	77-
Unit values Totals	0.13 6.38	0.54 \$27	1.94 \$99	0.00 \$0	51.00 0.00 \$0	2.48 \$126
1631200100	HEATING :	SYSTEM POWE	er / contro	L PANEL	13.00	Po.
Unit values Totals	2.96 38.52	320.72 \$4,169	45.97 \$598	0.00 \$0	0.00	366.69 \$4,767
1641600500	TRANSFORI	MER OIL PAI	15KV 480V	3P1000KVA	1.00	En.
Unit values Totals	76.92 76.92	17408.80 \$17,409	1184.40 \$1,184	225.60 \$226	0.00	18818.80 \$18,819
1671104800	UNDERGRO	UND DUCT BA	ANK PVC TYPI	E EB 4 - 2'		T II
Unit values Totals	0.13 39.90	1.48 \$444	2.07 \$621	0.00 \$0	300.00 0.00 \$0	3.55 \$1,065
U16 ELECTRICAL	257	\$27,339	\$3,969	\$226	\$0	\$31,534

==============						=======
Line #	Descript:	ion				
	Manhours	Matl	Labor	Equipment	Sub	Total
	=======	=======		=======		
ESTIMATE TOTAL	2411	\$112,236	\$48,302	\$4,394	\$0	\$164,932
SALES TAX MATL MARKUP LABOR MARKUP	0.00% 0.00% 0.00%	\$0 \$0	\$0			
EQUIPT MARKUP SUB MARKUP	0.00%		Ψ°	\$0	\$0	
TOTAL BEFORE C CONTINGENCY BOND	ONTINGENC 10.00% 0.00%	\$112,236	\$48,302	\$4,394	\$0	\$164,932 \$16,493 \$0
PROFIT	10.00%					\$16,493
JOB TOTAL						\$197,918

Estimate: BLDG 7937 Date: 28-Nov-94

Description: ELECTRIC INFRARED HEATING SYSTEM COST ESTIMATE

Project: LIMITED EEAP(HGR) Bid Date:

0.00%

10.00%

30-Nov-94

BOND

PROFIT

JOB TOTAL

Location: FORT BRAGG, N.C Job #: 94013.04 Sq. footage: 37842 City indx:Raleigh, NC

SUMMARY Manhours Matl Labor Equipment Sub Total A09 ELECTRICAL 1127 \$41,856 U02 SITEWORK 782 \$118 \$0 \$24,703 \$0 \$66,559 \$15,375 \$4,168 \$19,661 \$13 \$13 U03 CONCRETE \$83 2 \$70 \$0 \$0 243 \$42,853 \$4,242 257 \$27,339 \$3,969 \$47,095 U15 MECHANICAL \$0 \$0 \$226 \$0 \$31,534 U16 ELECTRICAL TOTAL 2411 \$112,236 \$48,302 \$4,394 \$0 \$164,932 SALES TAX 0.00% \$0 MATL MARKUP 0.00% \$0 \$0 LABOR MARKUP 0.00% EQUIPT MARKUP 0.00% \$0 \$0 0.00% SUB MARKUP TOTAL BEFORE CONTINGENC \$112,236 \$48,302 \$4,394 \$164,932 \$0 CONTINGENCY 10.00% \$16,493

\$0

\$16,493

\$197,918

LCCID FY95 (92) ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3 PROJECT NO. & TITLE: 94013.04 LES: ECO3 - ELECTRIC INFRARED HEAT FISCAL YEAR 95 DISCRETE PORTION NAME: ECO ANALYSIS DATE: 12-05-94 ECONOMIC LIFE 20 YEARS PREPARED BY: G.B. LOFLIN 1. INVESTMENT A. CONSTRUCTION COST \$ 192848. B. SIOH 9642. C. DESIGN COST \$
D. TOTAL COST (1A+1B+1C) \$ 8642. 211132. E. SALVAGE VALUE OF EXISTING EQUIPMENT \$ Ο. F. PUBLIC UTILITY COMPANY REBATE Ο. G. TOTAL INVESTMENT (1D - 1E - 1F) 211132. 2. ENERGY SAVINGS (+) / COST (-) DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1994 UNIT COST SAVINGS ANNUAL \$ DISCOUNT \$/ MWH(1) MWH/YR(2) SAVINGS(3) FACTOR(4) DISCOUNTED MWH/YR(2) SAVINGS(3) FUEL \$/ MWH(1) FACTOR(4) SAVINGS(5) A. ELECT \$ 34.95 B. DIST \$ 19.18 C. RESID \$.00 -326. -11403. 15.08 -171954. 2762. 52974. 18.57 983724. 0. 0. 21.02 0. 0. D. NAT G \$ 13.44 0. 18.58 0. \$ 0. \$ 0. \$ -53211. E. COAL \$.00 F. PPG \$.00 0. 16.83 0. 0. 17.38 0. M. DEMAND SAVINGS 14.88 -791780. 2436. \$ -11640. N. TOTAL 19990. 3. NON ENERGY SAVINGS(+) / COST(-) A. ANNUAL RECURRING (+/-) \$ 6454. (1) DISCOUNT FACTOR (TABLE A) 14.88 (2) DISCOUNTED SAVING/COST (3A X 3A1) 96039. B. NON RECURRING SAVINGS(+) / COSTS(-) SAVINGS(+) YR DISCNT DISCOUNTED ITEM COST(-) OC FACTR SAVINGS(+)/ (1) (2) (3) COST(-)(4) d. TOTAL \$ 0. 0. C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)\$ 96039. 4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))\$ 5. SIMPLE PAYBACK PERIOD (1G/4) -40.71 YEARS 6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) 116029. 7. SAVINGS TO INVESTMENT RATIO (SIR) = (6 / 1G) =.55 (IF < 1 PROJECT DOES NOT QUALIFY) **** Project does not qualify for ECIP funding; 4,5,6 for information only.

LIFE CYCLE COST ANALYSIS SUMMARY

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR):

N/A

STUDY: 8944ECO3

Estimate: BLDG 8944 Date: 28-Nov-94 Description: ELECTRIC INFRARED HEATING SYSTEM COST ESTIMATE LIMITED EEAP(HGR) Bid Date: Project: FORT BRAGG, N.C Job #: 94013.04 Location: Sq. footage: 38099 City indx:Raleigh, NC Description Manhours Matl Labor Equipment Sub _______ 0913100280 FEEDER INSTALLATION, INCLUDING CONDUIT AND WIRE, 200 AMPERES 0.31 9.45 2800.00 L.F. 0.00 16.16 Unit values 9.45 6.71 0.00 Totals 856.80 \$26,447 \$18,792 \$0 \$0 \$45,239 0914100360 SWITCHGEAR INST, INCL SWBD, PANELS & CIRC BKR, 1600 AMPERES 208.17 13519.60 1.00 EACH 0.00 Unit values 4568.40 0.00 18088.00 Totals 208.17 \$13,520 \$4,568 \$0 \$0 \$18,088 \$0 A09 ELECTRICAL 1065 \$39,967 \$23,360 \$0 \$63,327

		=======		========	======	
Line #	Descriptio	n				
	Manhours			Equipment		Total
0205541750	PAVEMENT R	EMOVAL, I	BITUMINOUS	, 4" TO 6"	THICK 40.00	S.Y.
Unit values Totals	0.10 3.80	0.00 \$0	1.73 \$69	2.50 \$100	0.00	
0205543200	SITE REMOV. 4"DIAMETE				3000 00	L.F.
Unit values Totals	0.15 450.00	0.00 \$0	2.61 \$7,838	1.06 \$3,191	0.00	3.68
0207183600	HVAC DEMO,	MECH EQPT	T HEAVY ITE		2.00	To m
Unit values Totals	14.55 29.09	0.00 \$0	314.87 \$630	0.00 \$0	0.00	314.87 \$630
0208400600	REMOVE PIP	E INSULAT	TION UP TO	4" DIAMETE		T 17
Unit values Totals	0.07 213.00	0.00 \$0	1.63 \$4,902	0.20 \$587		1.83 \$5,489
0208401000	REMOVE INST		FROM PIPE F	FITTING, UP	TO 4" 400.00	
Unit values Totals	0.20 80.00	0.00 \$0	4.60 \$1,838	0.56 \$225	0.00	5.16
0222540060	EXCAV TRENC	CH, COMMO	ON EARTH, 1	L'-4' DEEP,	1/2 25.00	CY
Unit values Totals	0.08			1.17 \$29	0.00	2.64
0222541900	TAMPING TRI	ENCH B'FI	LL, VIBRAT	ING PLATE,	ADD 25.00	CV
Unit values Totals	0.09 2.23	0.00 \$0	1.44 \$36	0.55 \$14		1.99 \$50
0222543020	BACKFILL TH BUCKET, MIN	RENCH, F.	E.LOADER,	WHEEL MTD.	, 1CY 25.00	C. V
Unit values Totals	0.03 0.75	0.00 \$0	0.58 \$14	0.48 \$12	0.00	1.06
0251040380	ASPHALTIC (COURSE, 2"		PAVEMENT,	PAVING, WE	ARING 40.00	c v
Unit values Totals	0.02 0.60	2.96 \$118	0.27 \$11	0.25 \$10	0.00	3.48 \$139

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Line #	Description	on				
	Manhours	Matl	Labor	Equipment	Sub	Total
U02 SITEWORK	782	\$118	\$15,375	\$4,168	\$0	\$19,661
0331305010 Unit values Totals	6" THICK 0.02 1.15	SLAB FOR 1.45 \$70	NEW TRANS 0.28 \$13	SFORMER 0.00 \$0	48.00 0.00 \$0	S.F. 1.73 \$83
U03 CONCRETE	2	\$70	\$13	\$0	\$0	\$83

Line #	Descripti	on				
	Manhours	Matl	Labor	Equipment	Sub	Total
	========	======				=======
1554512050	HTG INFRA	RED ELEC	6KW 20478	BBTU	5.00	E o
Unit values Totals	2.67 13.34			0.00 \$0	0.00	
1554512100	HTG INFRA	RED ELEC	13.5KW 46	6075.5BTU	F 00	n _
Unit values Totals	3.20 16.00			0.00 \$0	5.00 0.00 \$0	
1554512150	HTG INFRA	RED ELEC	27KW 9215	51BTU	20.00	_
Unit values Totals	4.00 156.00	879.31 \$34,293				945.86 \$36,888
1574205220	ELECTRIC '	THERMOSTAT	r w/ cover	R AND WIRING	50.00	_
Unit values Totals	1.00 50.00	74.93 \$3,746	20.81 \$1,041			Ea. 95.74 \$4,787
U15 MECHANICAL	236	\$41,988	\$4,124	\$0	\$0	\$46,112

Line #	Descript:	ion				
	Manhours	Matl		Equipment	Sub	Total
=======================================	=======	=======		========	======	========
1611400600	MINERAL :	INSULATED	CABLE 600	V 1 #4	3 50	C.L.F.
Unit values Totals		402.81 \$1,410		0.00 \$0	0.00	506.02
1611400800	MINERAL :	INSULATED	CABLE 600	V 1 #2	-	
Unit values Totals	7.27 50.91	537.08 \$3,760	112.80 \$790	0.00 \$0	7.00 0.00 \$0	
1621100220	OUTLET BO	OXES STEEL	, 4" SQ, 2	-1/8" DEEP,		_
Unit values Totals	K.O.'S 0.40 20.00	2.36 \$118	6.20 \$310	0.00 \$0	50.00 0.00 \$0	8.57
1621100250	OUTLET BO	OX STEEL 4	" COVERS B	LANK	50.00	***
Unit values Totals	0.13 6.25	0.54 \$27	1.94 \$97	0.00 \$0	50.00 0.00 \$0	2.48 \$124
1631200100	HEATING S	SYSTEM POW	ER / CONTR	OL PANEL	12.00	77-
Unit values Totals		320.72 \$4,169	45.97 \$598	0.00 \$0	13.00 0.00 \$0	366.69 \$4,767
1641600500	TRANSFORM	MER OIL PA	D 15KV 480	V 3P1000KVA		_
Unit values Totals	76.92 76.92	17408.80 \$17,409	1184.40 \$1,184		1.00 0.00 \$0	
1671104800	UNDERGROU	IND DUCT B	ANK PVC TY	PE EB 4 - 2'		
Unit values Totals	0.13 39.90	1.48 \$444	2.07 \$621	0.00 \$0	300.00 0.00 \$0	3.55
U16 ELECTRICAL	256	\$27,337	\$3,961	\$226	\$0	\$31,524

			======		=======	=======
Line #	Descript:	ion				
	Manhours	Matl	Labor	Equipment	Sub	Total
***********						========
ESTIMATE TOTAL	2341	\$109,480	\$46,833	\$4,394	\$0	\$160,707
SALES TAX MATL MARKUP LABOR MARKUP	0.00% 0.00% 0.00%	\$0 \$0	\$0			
EQUIPT MARKUP SUB MARKUP	0.00%		ψv	\$0	\$0	
TOTAL BEFORE COCONTINGENCY BOND	ONTINGENC 10.00% 0.00%	\$109,480	\$46,833	\$4,394	\$0	\$160,707 \$16,071 \$0
PROFIT	10.00%					\$16,071
JOB TOTAL		•				\$192,848

Estimate: BLDG 8944 Date: 28-Nov-94

Description: ELECTRIC INFRARED HEATING SYSTEM COST ESTIMATE
Project: LIMITED EEAP(HGR) Bid Date:
Location: FORT BRAGG, N.C Job #: 94013.04

Sq. footage: 38099 City indx:Raleigh, NC

SUMMARY Manhours Matl Labor Equipment Sub Total ______ A09 ELECTRICAL 1065 \$39,967 U02 SITEWORK 782 \$118 U03 CONCRETE 2 \$70 U15 MECHANICAL 236 \$41,988 U16 ELECTRICAL 256 \$27,337 \$23,360 \$0 \$0 \$63,327 \$15,375 \$4,168 \$0 \$19,661 \$13 \$0 \$0 \$83 \$4,124 \$0 \$0 \$46,112 \$13 \$4,124 \$3 \$3,961 \$226 \$0 \$31,524 TOTAL 2341 \$109,480 \$46,833 \$4,394 \$0 \$160,707 SALES TAX 0.00% \$0 MATL MARKUP 0.00% \$0 \$0 LABOR MARKUP 0.00% EQUIPT MARKUP \$0 0.00% SUB MARKUP \$0 0.00% TOTAL BEFORE CONTINGENC \$109,480 \$46,833 \$4,394 \$0 \$160,707 CONTINGENCY 10.00% \$16,071 BOND 0.00% \$0 PROFIT 10.00% \$16,071 JOB TOTAL

\$192,848

LIFE CYCLE COST ANALYSIS SUMMARY

ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP)

INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3 PROJECT NO. & TITLE: 94013.04 LES: ECO3 - ELECTRIC INFRARED HEAT FISCAL YEAR 95 DISCRETE PORTION NAME: ECO ANALYSIS DATE: 12-05-94 ECONOMIC LIFE 20 YEARS PREPARED BY: G.B. LOFLIN 1. INVESTMENT A. CONSTRUCTION COST \$ 214760. 10738. 10738. \$ B. SIOH C. DESIGN COST D. TOTAL COST (1A+1B+1C) \$ 236236. E. SALVAGE VALUE OF EXISTING EQUIPMENT S F. PUBLIC UTILITY COMPANY REBATE G. TOTAL INVESTMENT (1D - 1E - 1F) 236236. 2. ENERGY SAVINGS (+) / COST (-) DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1994 UNIT COST SAVINGS ANNUAL \$ DISCOUNT DISCOUNTED \$/ MWH(1) MWH/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5) A. ELECT \$ 34.95 B. DIST \$ 19.18 C. RESID \$.00 D. NAT G \$ 13.44 E. COAL \$.00 -300. -157966. 15.08 -300. 1887. 672140. 18.57 21.02 0. 0. 0. 0. 0. 18.58 0. 16.83 17.38 14.88 0. .00 F. PPG \$ Ο. M. DEMAND SAVINGS -707127.1587. N. TOTAL -192953. 3. NON ENERGY SAVINGS(+) / COST(-) A. ANNUAL RECURRING (+/-) 1232. (1) DISCOUNT FACTOR (TABLE A) 14.88 \$ 18327. (2) DISCOUNTED SAVING/COST (3A X 3A1) B. NON RECURRING SAVINGS(+) / COSTS(-) SAVINGS(+) YR DISCNT COST(-) OC FACTR DISCOUNTED SAVINGS(+)/ COST(-) ITEM (1) (2) (3) COST(-)(4)d. TOTAL \$ 0. C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)\$ 18327. 4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))\$ -20571. 5. SIMPLE PAYBACK PERIOD (1G/4) -11.48 YEARS 6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) \$ -174626. 7. SAVINGS TO INVESTMENT RATIO (SIR) = (6 / 1G) =(IF < 1 PROJECT DOES NOT QUALIFY) **** Project does not qualify for ECIP funding; 4,5,6 for information only.

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR):

N/A

Estimate: BLDG 9647 Date: 28-Nov-94 Description: ELECTRIC INFRARED HEATING SYSTEM COST ESTIMATE Project: LIMITED EEAP(HGR) Bid Date: Location: FORT BRAGG, N.C Job #: 94013.04 Sq. footage: 31586 City indx:Raleigh, NC Description --------Manhours Matl Labor Equipment Sub _______ 0913100280 FEEDER INSTALLATION, INCLUDING CONDUIT AND WIRE, 200 AMPERES 4000.00 L.F. 6.71 Unit values 0.31 9.45 0.00 0.00 16.16 Totals 1224.00 \$37,781 \$26,846 \$0 \$0 \$64,627 0914100360 SWITCHGEAR INST, INCL SWBD, PANELS & CIRC BKR, 1600 AMPERES 1.00 EACH 4568.40 0.00 \$4,568 \$0 Unit values 208.17 13519.60 0.00 18088.00 208.17 \$13,520 Totals \$0 \$18,088 A09 ELECTRICAL 1433 \$51,301 \$31,414 \$0 \$0 \$82,715

		=======	=======			
Line #	Description	on				
	Manhours			Equipment		Total
0205541750						
Unit values Totals				2.50 \$100	40.00	4.23
0205543200 Unit values	SITE REMOV 4"DIAMETE 0.15 600.00	·	•	1.06 \$4,255		L.F. 3.68 \$14,705
Totals 0207183600				EM	2.00	
Unit values Totals	14.55 29.09	0.00 \$0	314.87 \$630	0.00	0.00	314.87 \$630
0208400600					4000.00	
Unit values Totals	284.00	\$0	\$6,536	\$783	0.00 \$0	1.83 \$7,319
0208401000 Unit values Totals	DIAMETED I	ישמדה		FITTING, UP 0.56 \$281	E00 00	P-
0222540060 Unit values Totals	CY TRAC/LI 0.08	0.00	1.47	1'-4' DEEP, 1.17 \$29	25.00	
0222541900 Unit values Totals	TAMPING TF 0.09 2.23	0.00 \$0		TING PLATE, 0.55 \$14	25.00	C.Y. 1.99 \$50
0222543020 Unit values		RENCH, F		WHEEL MTD.	, 1CY 25.00	C.Y.
Totals 0251040380	0.75	\$0	\$14	0.48 \$12 PAVING, WE	0.00 \$0 CARING	1.06 \$26
Unit values Totals	COURSE, 2" 0.02 0.60	THICK 2.96 \$118	0.27 \$11		40.00 0.00 \$0	S.Y. 3.48 \$139

Line #	Description	on				
	Manhours	Matl	Labor	Equipment	Sub	Total
U02 SITEWORK	1023	\$118	\$20,081	\$5,484	\$0	\$25,683
0331305010 Unit values	6" THICK 0.02	SLAB FOR	NEW TRANS	SFORMER 0.00	48.00	S.F.
Totals	1.15	\$70	\$13	\$0	\$0	\$83
U03 CONCRETE	2	\$70	\$13	\$0	\$0	\$83

Line #	Descripti	on				
	Manhours	Matl	Labor	Equipment	Sub	Total
1554512050	HTG INFRA	RED ELEC	6KW 20478	BBTU	7.00	Eo
Unit values Totals	2.67 18.67	334.67 \$2,343			0.00 \$0	379.13
1554512100	HTG INFRA	RED ELEC	13.5KW 46	5075.5BTU	7.00	Eo
Unit values Totals		455.20 \$3,186	53.24 \$373	0.00 \$0	0.00	
1554512150	HTG INFRA	RED ELEC	27KW 9215	SIBTU	22.00	m -
Unit values Totals		879.31 \$29,017		0.00 \$0		945.86 \$31,213
1574205220	ELECTRIC '	THERMOSTAT	W/ COVER	R AND WIRING	40.00	n -
Unit values Totals		74.93 \$2,997	20.81 \$832	0.00 \$0		95.74 \$3,829
U15 MECHANICAL	214	\$37,543		\$0	\$0	\$41,255

Line #	Descripti	ion				
	Manhours	Matl	Labor I	Equipment	Sub	Total
1611400600	MINERAL 1	INSULATED (CABLE 6001	<i>J</i> 1 #4	3 00	C.L.F.
Unit values Totals	6.67 20.00	402.81 \$1,208	103.21 \$310	0.00 \$0	0.00	506.02
1611400800	MINERAL 1	NSULATED (CABLE 600V	<i>I</i> 1 #2	<i>C</i> 00	C.L.F.
Unit values Totals	7.27 43.64	537.08 \$3,222	112.80 \$677	0.00 \$0	0.00	
1621100220	OUTLET BO	XES STEEL,	4" SQ, 2-	-1/8" DEEP,	1" 40.00	Po.
Unit values Totals	0.40 16.00	2.36 \$94	6.20 \$248	0.00 \$0	0.00	8.57 \$342
1621100250	OUTLET BO	X STEEL 4'	COVERS BI	ANK	40.00	Eo
Unit values Totals	0.13 5.00	0.54 \$21	1.94 \$78	0.00 \$0	0.00	2.48
1631200100	HEATING S	SYSTEM POWE	ER / CONTRO	L PANEL	10.00	E-a
Unit values Totals	2.96 29.63	320.72 \$3,207	45.97 \$460	0.00 \$0	0.00	366.69 \$3,667
1641600500	TRANSFORM	IER OIL PAI	15KV 480V	3P1000KVA	1.00	To
Unit values Totals	76.92 76.92	17408.80 \$17,409	1184.40 \$1,184		0.00	
1671104800	UNDERGROU	ND DUCT BA	NK PVC TYP	PE EB 4 - 2	" DIA 250.00	T 172
Unit values Totals	0.13 33.25	1.48 \$370	2.07 \$517	0.00 \$0	0.00	3.55 \$887
U16 ELECTRICAL	225	\$25,531	\$3,474	\$226	\$0	\$29,231

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Line #	Descript:	ion				
	Manhours	Matl	Labor	Equipment	Sub	Total
=======================================	=======			=======================================		========
ESTIMATE TOTAL	2897	\$114,563	\$58,694	\$5,710	\$0	\$178,967
SALES TAX MATL MARKUP LABOR MARKUP	0.00% 0.00% 0.00%	\$0 \$0	\$0			
EQUIPT MARKUP SUB MARKUP	0.00%		Ψ°	\$0	\$0	
TOTAL BEFORE COCONTINGENCY BOND	ONTINGENC 10.00% 0.00%	\$114,563	\$58,694	\$5,710	\$0	\$178,967 \$17,897 \$0
PROFIT	10.00%					\$17,897
JOB TOTAL						\$214,760

Estimate: BLDG 9647 Date: 28-Nov-94

Description: ELECTRIC INFRARED HEATING SYSTEM COST ESTIMATE Project: LIMITED EEAP(HGR) Bid Date:

Job #:

Location: Sq. footage: 31586

FORT BRAGG, N.C

94013.04 City indx:Raleigh, NC

SUMMARY

	2	SUMMARY				
	Manhours	Matl	Labor	Equipment	Sub	Total
=======================================			=======	========		
A09 ELECTRICAL U02 SITEWORK U03 CONCRETE U15 MECHANICAL U16 ELECTRICAL	1433 1023 2 214 225	\$51,301 \$118 \$70 \$37,543 \$25,531	\$31,414 \$20,081 \$13 \$3,712 \$3,474	\$0 \$5,484 \$0 \$0 \$226	\$0 \$0 \$0 \$0 \$0	\$82,715 \$25,683 \$83 \$41,255 \$29,231
TOTAL	2897	\$114,563	\$58,694	\$5,710	\$0	\$178,967
SALES TAX MATL MARKUP LABOR MARKUP EQUIPT MARKUP	0.00% 0.00% 0.00% 0.00%	\$0 \$0	\$0	\$0		
SUB MARKUP	0.00%				\$0	
TOTAL BEFORE COCONTINGENCY BOND PROFIT	ONTINGENC 10.00% 0.00% 10.00%	\$114,563	\$58,694	\$5,710	\$0	\$178,967 \$17,897 \$0 \$17,897
JOB TOTAL						\$214,760

10 ECO - 4 LIFE CYCLE COST ANALYSES

LIMITED ENERGY STUDY OF HANGAR FACILITIES AT SIMMONS ARMY AIRFIELD, FT. BRAGG, NC

This section contains the life-cycle cost analyses and construction cost estimates for ECO-4: HVAC Renovations. The analyses and estimates are sorted by building number.

LCCA AND COST ESTIMATE: (sorted by building)

2936	10-3
3262	10-11
3354	10-19
3637	10-29
3642	10-38
3962	10-47
4137	10-56
4242	10-65

LCCA ECO-4
All Buildings

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LIFE CYCLE COST ANALYSIS SUMMARY STUDY: ECO4TOTL ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID FY95 (92)
  INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3
  PROJECT NO. & TITLE: 94013.04 LES: ECO4 - TOTAL ALL BUILDINGS
  FISCAL YEAR 95 DISCRETE PORTION NAME: ECO
  ANALYSIS DATE: 12-13-94 ECONOMIC LIFE 20 YEARS PREPARED BY: G.B. LOFLIN
  1. INVESTMENT
  A. CONSTRUCTION COST $
B. SIOH $
C. DESIGN COST $
                                    798044.
 B. SIOH $ 39902.
C. DESIGN COST $ 39902.
D. TOTAL COST (1A+1B+1C) $ 877848.
  E. SALVAGE VALUE OF EXISTING EQUIPMENT $
F PUBLIC UTILITY COMPANY REBATE $
  F. PUBLIC UTILITY COMPANY REBATE
G. TOTAL INVESTMENT (1D - 1E - 1F)
                                                          0.
                                                                  877848.
  2. ENERGY SAVINGS (+) / COST (-)
  DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1994
                UNIT COST SAVINGS ANNUAL $ DISCOUNT DISCOUNTED $/ MWH(1) MWH/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5)
      FUEL
                               -51. $ -1775. 15.08 $ 1202. $ 23052. 18.57 $ 0. $ 0. 21.02 $ 0. $ 0. 18.58 $ 0. $ 0. $ 0. 16.83 $ 0. $ 0. $ 0. 17.38 $ 1151. $ 25717.
      A. ELECT $ 34.95
                                                                                 -26769.
      B. DIST $ 19.18
C. RESID $ .00
D. NAT G $ 13.44
                                                               21.02 $ $ 18.58 $ $ 16.83 $ $ 17.38 $ $ 14.88 $ $
                                                                               428080.
                                                                                  0.
                                                                                       0.
      E. COAL $ .00
F. PPG $ .00
                                                                                      0.
                                                                                0.
66067.
      M. DEMAND SAVINGS
      N. TOTAL
                                                                               467379.
 3. NON ENERGY SAVINGS(+) / COST(-)
     A. ANNUAL RECURRING (+/-)
          (1) DISCOUNT FACTOR (TABLE A)
                                                              14.88
$ 303582.
                                                                                 20402.
          (2) DISCOUNTED SAVING/COST (3A X 3A1)
     B. NON RECURRING SAVINGS(+) / COSTS(-)
                                   SAVINGS(+) YR DISCNT
COST(-) OC FACTR
                                                                    DISCOUNTED
                                     COST(-) OC (1) (2)
                                                                    SAVINGS(+)/
                                                                    COST(-)(4)
                                                        (3)
      d. TOTAL
                                   $ 0.
     C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)$ 303582.
 4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))$ 46119.
 5. SIMPLE PAYBACK PERIOD (1G/4)
                                                                             19.03 YEA
 6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C)
                                                                            $ 770961.
 7. SAVINGS TO INVESTMENT RATIO
                                               (SIR) = (6 / 1G) =
     (IF < 1 PROJECT DOES NOT QUALIFY)
** Project does not qualify for ECIP funding; 4,5,6 for information only.
 8. ADJUSTED INTERNAL RATE OF RETURN (AIRR):
                                                                             N/A
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LCCA & COST ESTIMATE (sorted by building)

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LIFE CYCLE COST ANALYSIS SUMMARY
                                                                            STUDY: 2936EC04
           ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID FY95 (92)
     INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3
     PROJECT NO. & TITLE: 94013.04 LES: ECO4 - HVAC RENOVATIONS
     FISCAL YEAR 95 DISCRETE PORTION NAME: ECO
     ANALYSIS DATE: 12-12-94 ECONOMIC LIFE 20 YEARS PREPARED BY: G.B. LOFLIN
     1. INVESTMENT
     A. CONSTRUCTION COST $ 111823.

B. SIOH $ 5591.

C. DESIGN COST $ 5591.

D. TOTAL COST (1A+1B+1C) $ 123005.
     E. SALVAGE VALUE OF EXISTING EQUIPMENT $
                                                                 0.
     F. PUBLIC UTILITY COMPANY REBATE
                                                                  Ο.
     G. TOTAL INVESTMENT (1D - 1E - 1F)
                                                                             123005.
     2. ENERGY SAVINGS (+) / COST (-)
     DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1994
                UNIT COST SAVINGS ANNUAL $ DISCOUNT DISCOUNTED $/ MWH(1) MWH/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5)
          FUEL

      87.
      $ 3032.
      15.08 $ 45721.

      1.
      $ 21.
      18.57 $ 392.

      0.
      $ 0.
      21.02 $ 0.

      0.
      $ 0.
      18.58 $ 0.

      0.
      $ 0.
      16.83 $ 0.

      0.
      $ 0.
      17.38 $ 0.

      $ 555.
      14.88 $ 8258.

      88.
      $ 3608.
      $ 54371.

          A. ELECT $ 34.95
         B. DIST $ 19.18
C. RESID $ .00
D. NAT G $ 13.44
         E. COAL $ .00
F. PPG $ .00
         M. DEMAND SAVINGS
         N. TOTAL
     3. NON ENERGY SAVINGS (+) / COST (-)
              $ 2374.

(2) DISCOUNTED SAVING/COST (3A X 3A1)

ON RECYPT
        A. ANNUAL RECURRING (+/-)
             (1) DISCOUNT FACTOR (TABLE A)
        B. NON RECURRING SAVINGS(+) / COSTS(-)
                                        SAVINGS(+) YR DISCNT
COST(-) OC FACTR
(1) (2) (3)
                                                                            DISCOUNTED
                        ITEM
                                                                             SAVINGS(+)/
                                                                             COST(-)(4)
         d. TOTAL
                                                 Ο.
        C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)$ 35319.
     4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))$
     5. SIMPLE PAYBACK PERIOD (1G/4)
                                                                                      20.56 YEARS
    6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C)
                                                                                     $ 89690.
     7. SAVINGS TO INVESTMENT RATIO
                                                      (SIR) = (6 / 1G) =
                                                                                  .73
         (IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.
```

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR):

PAGE 10-3

N/A

______ Estimate: BLDG 2936 Date: 02-Dec-94
Description: RENOVATE HVAC SYSTEM COST ESTIMATE (Replace Existing HVAC Project: LIMITED EEAP(HGR) Bid Date: (EXCEPT Location: FORT BRAGG, N.C. Job #: 94013.04
Sq. footage: ******* City indx:Raleigh, NC

Description

_____ Manhours Matl Labor Equipment Sub Total ______

FEEDER INSTALLATION, INCLUDING CONDUIT AND 0913100280 WIRE, 200 AMPERES 0.31 9.45 300.00 L.F. 9.45 6.71 0.00 \$2,834 \$2,013 \$0 16.16 Unit values 0.00 Totals 91.80 \$0 \$4,847

A09 ELECTRICAL 92 \$2,834 \$2,013 \$0 \$0 \$4,847

Line #	Description	======= 1				
	Manhours	Matl	Labor Eq	•		Total
=======================================			========			==========
0205543200	SITE REMOVA		PIPE, WELDED	CONNECTIO	ON, 200.00	T. 🗗
Unit values Totals	0.15 30.00	0.00	2.61 \$523	1.06 \$213	0.00	
0207181240	HVAC DEMO,	DUCTWORK	, 10"HI X 2	4" WIDE	50.00	T D
Unit values Totals	0.07 3.65	0.00 \$0	1.17 \$59	0.00 \$0	0.00	1.17
0207183600	HVAC DEMO, N	MECH EQPT	HEAVY ITEM		7.00	Ton
Unit values Totals	14.55 101.82	0.00 \$0	314.87 \$2,204	0.00 \$0	0.00	314.87 \$2,204
0208400600	REMOVE PIPE	E INSULAT	ION UP TO 4	" DIAMETE	R PIPE 200.00	T 15
Unit values Totals	0.07 14.20	0.00 \$0	1.63 \$327	0.20 \$39	0.00	1.83
0208401000	REMOVE INSU	JLATION F	ROM PIPE FI	TTING, UP	TO 4" 50.00	E-2
Unit values Totals	0.20 10.00	0.00	4.60 \$230	0.56 \$28	0.00	5.16
0222541900	TAMPING TRE	ENCH B'FI	LL, VIBRATI	NG PLATE,		C.Y.
Unit values Totals	0.09 0.40	0.00 \$0	1.44 \$6	0.55 \$2	0.00	
0222582800	TRENCH EXCV	TNG 40HP	CHNTRNCHR&	BKFL 12"W2		
Unit values Totals	0.01 0.60	0.00 \$0	0.20 \$12	0.20 \$12	60.00 0.00 \$0	0.39 \$24
0260120200	BEDDING, FO	R PIPE I	N TRENCH SAI	ND, DEAD (C.Y.
Unit values Totals	0.16 0.24	3.79 \$6	2.79 \$4	1.13	0.00	7.71 \$12
0260120500	BEDDING, PL	ACING IN	TRENCH		1 50	CV
Unit values Totals	0.09 0.13	0.00 \$0	1.44 \$2	0.55 \$1	1.50 0.00 \$0	1.99

Line #	Descripti	on				
				Equipment		
==========	========	=======				
U02 SITEWORK	162	\$6	\$3,367	\$297	\$0	\$3,670
1517010620	BLACK STE 2-1/2" D	EL PIPE,	SCHEDULE 6	40, THREADE	D, 100.00	L.F.
Unit values Totals	0.32 32.00	6.64 \$664	4.93 \$493	'OC 0.00 \$0	0.00 \$0	11.57 \$1,157
1556517150	PIPE CVR	FBGL 1.5'	THK ASJ 2	-1/2"IPS	1000 00	L.F.
Unit values Totals	0.09 89.00	1.65 \$1,648	1.30 \$1,301	0.00 \$0		2.95 \$2,949
1556519680	PIPE CVR	URTHAN UI	TV ELL 1.	5W 1"IPS	70.00	Fa
Unit values Totals			2.47 \$173	0.00 \$0	0.00	8.96
1556519840	PIPE CVR	URETH UV	TEE/VLV 1	"W 1"IPS	30.00	T-3
Unit values Totals	0.24 7.26			0.00 \$0	0.00	11.33 \$340
1571801160	ROOF TOP	A/C SINGI	LE ZONE 10	TON	1.00	E o
Unit values Totals	52.17 52.17		831.88 \$832		0.00	8848.85 \$8,849
1571801170	ROOF TOP	A/C SINGI	SE ZONE 12	.5 TON	2 00	Ea.
Unit values Totals	63.16 126.32	9140.85 \$18,282	1013.38 \$2,027	0.00 \$0	0.00	10154.23 \$20,309
1571801180	ROOFTOP A	C SINGLE	ZONE 15 TO	NC	1.00	F a
Unit values Totals	77.42 77.42	10589.40 \$10,589	1240.25 \$1,240	0.00 \$0	0.00	11829.65 \$11,829
1571900536	WATER CHI	LLER RECI	PROCATING	AIR COOLED	55 TON 1.00	Fa
Unit values Totals	177.00 177.00		2904.00 \$2,904		0.00	
1572014520	COIL HOT X 8FIN 12		COP TUBE A	AL FIN 1ROW	4.00	۳n
Unit values Totals	1.32		20.27 \$81	0.00 \$0	0.00	299.99 \$1,200
1574807504	AC&V VARI	VLM MODU	LATING MOT	TORIZED DMP	8X6 20.00	Ea.
-						

05-Dec-94		MeansDa	ata for Lot	us		Page 4
Unit values Totals	0.53 10.66	108.89 \$2,178	8.83 \$177	0.00 \$0	0.00	117.72 \$2,355
1574807510	AC&V VARI	VLM MODUL	ATING MOTOR	IZED DMP	10X10 29.00	Ea.
Unit values Totals	0.62 17.84	112.89 \$3,274	10.19 \$296	0.00 \$0	0.00	123.08 \$3,570
1574807520	AC&V VARI	VLM MODUL	ATING MOTOR	IZED DMP	12X12 10.00	T a
Unit values Totals	0.67 6.67	114.89 \$1,149	11.04 \$110	0.00 \$0	0.00	125.93 \$1,259
1574807700	VARI VLM	MODULATING	MOTORIZED	THERMST AI	-	D-
Unit values Totals	1.00 59.00	29.47 \$1,739	16.64 \$982	0.00 \$0	59.00 0.00 \$0	46.11 \$2,721

. %

Line #	Description						
	Manhours	Matl	Labor	Equipment	Sub	Total	
	=======				=======		
U15 MECHANICAL	673	\$72,825	\$10,722	\$0	\$0	\$83,547	
1633600750	SAFETY SW	NF GEN DU	TY 240V 3	BP200AMP		_	
******************	6 35	105 00	05 00	0.00	4.00		
Unit values Totals	6.15 24.62	185.20 \$741	95.32 \$381	0.00 \$0	0.00	280.52 \$1,122	
U16 ELECTRICAL	25	\$741	\$381	\$0	\$0	\$1,122	

Line #	Descripti	on						
	Manhours	Matl	Labor	Equipment	Sub	Total		
=========								
ESTIMATE TOTAL	952	\$76,406	\$16,483	\$297	\$0	\$93,186		
SALES TAX MATL MARKUP LABOR MARKUP	0.00% 0.00% 0.00%	\$0 \$0	\$0					
EQUIPT MARKUP SUB MARKUP	0.00%		ŞO	\$0	\$0			
TOTAL BEFORE CONTINGENCY BOND	ONTINGENC 10.00% 0.00%	\$76,406	\$16,483	\$297	\$0	\$93,186 \$9,319 \$0		
PROFIT	10.00%					\$9,319		
JOB TOTAL						\$111,823		

_______ Estimate: BLDG 2936 Date: 02-Dec-94
Description: RENOVATE HVAC SYSTEM COST ESTIMATE (Replace Existing HVAC Project: LIMITED EEAP(HGR) Bid Date: (EXCEPT Location: FORT BRAGG, N.C. Job #: 94013.04
Sq. footage: ******* City indx:Raleigh, NC

CTTMANAN DISZ

SUMMARY						
	Manhours	Matl	Labor	Equipment	Sub	Total
	=======		=======		========	=======
A09 ELECTRICAL U02 SITEWORK U15 MECHANICAL U16 ELECTRICAL	92 162 673 25	\$2,834 \$6 \$72,825 \$741	\$2,013 \$3,367 \$10,722 \$381	\$0 \$297 \$0 \$0	\$0 \$0 \$0 \$0	\$4,847 \$3,670 \$83,547 \$1,122
TOTAL	952	\$76,406	\$16,483	\$297	\$0	\$93,186
SALES TAX MATL MARKUP LABOR MARKUP	0.00% 0.00% 0.00%	\$0 \$0	\$0			
EQUIPT MARKUP SUB MARKUP	0.00% 0.00%		•	\$0	\$0	
TOTAL BEFORE CO CONTINGENCY BOND PROFIT	ONTINGENC 10.00% 0.00% 10.00%	\$76,406	\$16,483	\$297	\$0	\$93,186 \$9,319 \$0 \$9,319
JOB TOTAL						\$111,823

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LIFE CYCLE COST ANALYSIS SUMMARY

ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP)

INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 94013.04 LES: ECO4 - HVAC RENOVATIONS
FISCAL YEAR 95 DISCRETE PORTION NAME: ECO
ANALYSIS DATE: 12-12-94 ECONOMIC LIFE 20 YEARS PREPARED BY: G.B. LOFLIN
1. INVESTMENT
A. CONSTRUCTION COST $
B. SIOH $
C. DESIGN COST $
D. TOTAL COST (1A+1B+1C) $
                                 231472.
                                   11574.
                                   11574.
                                254620.
E. SALVAGE VALUE OF EXISTING EQUIPMENT $
                                                     0.
                                                     Ο.
F. PUBLIC UTILITY COMPANY REBATE
                                                           $
G. TOTAL INVESTMENT (1D - 1E - 1F)
                                                               254620.
2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1994
            UNIT COST SAVINGS ANNUAL $ DISCOUNT DISCOUNTED $/ MWH(1) MWH/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5)
    FUEL
                              -65. $ -2279.
603. $ 11573.
0. $ 0.
0. $ 0.
0. $ 0.
0. $ 0.
555.
538. $ 9849.
    A. ELECT $ 34.95
B. DIST $ 19.18
C. RESID $ .00
D. NAT G $ 13.44
                                                             15.08
                                                                           -34363.
                                                            18.57
                                                                           214915.
                                                                           0.
                                                            21.02
                                                                                0.
                                                            18.58
                                                           16.83
17.38
    E. COAL $ .00
                                                                                0.
    F. PPG $ .00
                                                                               0.
    M. DEMAND SAVINGS
                                                             14.88
                                                                           8258.
    N. TOTAL
                                                                          188810.
3. NON ENERGY SAVINGS(+) / COST(-)
   A. ANNUAL RECURRING (+/-)
                                                                     $ 2586.
        (1) DISCOUNT FACTOR (TABLE A)
                                                        14.88
        (2) DISCOUNTED SAVING/COST (3A X 3A1)
                                                                            38479.
   B. NON RECURRING SAVINGS(+) / COSTS(-)
                               SAVINGS(+) YR
COST(-) OC
                                                               DISCOUNTED
                                                    DISCNT
                                 COST(-)
                 ITEM
                                                               SAVINGS(+)/
                                                    FACTR
                                     (1)
                                             (2)
                                                    (3)
                                                                COST(-)(4)
    d. TOTAL
                               $
                                    0.
                                                                        0.
   C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)$ 38479.
4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))$
                                                                          12435.
5. SIMPLE PAYBACK PERIOD (1G/4)
                                                                        20.48 YEARS
6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C)
                                                                      $ 227288.
                                           (SIR) = (6 / 1G) =
7. SAVINGS TO INVESTMENT RATIO
                                                                          .89
    (IF < 1 PROJECT DOES NOT QUALIFY)
8. ADJUSTED INTERNAL RATE OF RETURN (AIRR):
                                                                     2.42 %
```

Unit values

A09 ELECTRICAL 19

Totals

60.00 L.F.

0.00

\$0

\$0

16.16

\$970

\$970

_______ Estimate: BLDG 3262 Date: 02-Dec-94 Description: RENOVATE HVAC SYSTEM COST ESTIMATE (Fan Coil System Using Project: LIMITED EEAP(HGR) Bid Date:
Location: FORT BRAGG, N.C. Job #: 94013.04
Sq. footage: ******* City indx:Raleigh, NC Line # Description ______ Manhours Matl Labor Equipment Sub Total _______ 0913100280 FEEDER INSTALLATION, INCLUDING CONDUIT AND

\$567 \$403

6.71 0.00

\$0

\$0

\$403

WIRE, 200 AMPERES 0.31 9.45

18.36

9.45

\$567

	========	=======			======	
Line #	Descriptio	n				
	Manhours		Labor E	quipment	Sub	Total
=======================================			_ = = = = = = = = =		=======	
0205543200	SITE REMOV 4"DIAMETE	R	·	D CONNECTI	ON, 2500.00	
Unit values Totals	0.15 375.00	0.00 \$0	2.61 \$6,531	1.06 \$2,659	0.00 \$0	3.68 \$9,190
0207181240	HVAC DEMO,	DUCTWORK	, 10"HI X	24" WIDE	800.00	T. E
Unit values Totals	0.07 58.40	0.00 \$0	1.17 \$940	0.00 \$0	0.00	1.17
0207182340	HVAC DEMO,	FURNACE (GAS/OIL >1	20 MBH	1.00	Ea
Unit values Totals	5.33 5.33	0.00 \$0	111.48 \$111	0.00 \$0	0.00	111.48 \$111
0207183600	HVAC DEMO,	MECH EQPT	HEAVY ITE	М	10.00	Ton
Unit values Totals	14.55 145.45	0.00 \$0	314.87 \$3,149	0.00 \$0	0.00	314.87 \$3,149
0208400600	REMOVE PIP	E INSULAT	ION UP TO	4" DIAMETE	R PIPE 2000.00	T. III
Unit values Totals	0.07 142.00	0.00 \$0	1.63 \$3,268		0.00	1.83
0208401000	REMOVE INS DIAMETER P		ROM PIPE F	ITTING, UP	TO 4"	Ea.
Unit values Totals	0.20 40.00	0.00 \$0	4.60 \$919		0.00	5.16 \$1,031
0222541900	TAMPING TR	ENCH B'FI	LL, VIBRAT	ING PLATE,	ADD 4.50	CV
Unit values Totals	0.09 0.40	0.00 \$0	1.44 \$6	0.55 \$2		1.99
0222582800	TRENCH EXC	VTNG 40HP	CHNTRNCHR	&BKFL 12"W	24"D 60.00	T. D'
Unit values Totals	0.01 0.60			0.20 \$12	0.00	0.39 \$24
0260120200	BEDDING, F	OR PIPE II	N TRENCH S.	AND, DEAD	OR 1.50	CV
Unit values Totals	0.16 0.24	3.79 \$6	2.79 \$4	1.13 \$2	0.00	7.71 \$12
0260120500	BEDDING, P	LACING IN	TRENCH		1.50	C V
Unit values	0.09	0.00	1.44	0.55	0.00	1.99

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Totals 0.13 \$0 \$2 \$1 \$0 \$3

Line # Description							
	Manhours	Matl	Labor I	Equipment	Sub	Total	
U02 SITEWORK	768	\$6	\$14,942	\$3,179	\$ 0	\$18,127	
0331305010	6" THICK	REINFORCE	D SLAB FO	R HVAC EQUI	PMENT 130.00	e r	
Unit values Totals	0.02 3.12	1.45 \$189	0.28 \$36	0.00 \$0	0.00	1.73 \$225	
U03 CONCRETE	4	\$189	\$36	\$0	\$0	\$225	

		=======	=======		=======	
Line #	Descript	ion				
	Manhours			Equipment		Total
=========	=======	======		=======================================	=======	
1517010620	2-1/2"	DI W/CPLGS	&HNGRS 10'		3000.00	L.F.
Unit values Totals	0.32 960.00	6.64 \$19,930	4.93 \$14,792	0.00 \$0	0.00 \$0	11.57 \$34,722
1556517150	PIPE CVR	FBGL 1.5"	THK ASJ 2-	1/2"IPS	3000.00	T 17
Unit values Totals	0.09 267.00	1.65 \$4,945	1.30 \$3,902		0.00	
1556519680	PIPE CVR	URTHAN UL	TV ELL 1.5	W 1"IPS	170 00	T-
Unit values Totals		6.49 \$1,104		0.00 \$0		8.96 \$1,524
1556519840	PIPE CVR	URETH UV	TEE/VLV 1"	W 1"IPS	00 00	E o
Unit values Totals	0.24 19.36		3.54 \$283			11.33 \$906
1562408110	VALVE BU	TTERFLY SY	STEM BALAN	CING & SHUT		
Unit values Totals			12.40 \$992	0.00 \$0		35.88 \$2,870
1562450160	HVAC MIX	ING VALVE	2" IPS		70.00	n -
Unit values Totals	1.00	889.11 \$8,891	17.24 \$172	0.00 \$0	10.00 0.00 \$0	906.35 \$9,063
1571500110	FAN COIL WTR 3/4	AIR CONDI	T. CABINET	MTD FLTRS	CHILL 130.00	Fa
Unit values Totals	2.29	649.35 \$84,416	35.09 \$4,562	0.00 \$0	0.00	684.44 \$88,978
1571900536	WATER CH	LLER RECI	PROCATING A	AIR COOLED		_
Unit values Totals	177.00 177.00	23476.50 \$23,477	2904.00 \$2,904	0.00 \$0	1.00 0.00 \$0	
U15 MECHANICAL	1818	\$145,264	\$28,027	\$0	\$0	\$173,291

=======================================	=======		=======	========	=======	=======
Line #	Descripti	on				
	Manhours	Matl	Labor 1	Equipment	Sub	Total
=======================================	=======	======	:======:			
1633600750	SAFETY SW	NF GEN DU	JTY 240V 31	P200AMP		_
Unit values Totals	6.15 6.15	185.20 \$185	95.32 \$95	0.00 \$0	1.00 F 0.00 \$0	Ea. 280.52 \$280
U16 ELECTRICAL	7	\$185	\$95	\$0	\$0	\$280

ı	, ============	=======		=======		========	=======	=
	Line #	Descripti	ion					
		Manhours	Matl	Labor	Equipment	Sub	Total	_
	=========	=======						=
	ESTIMATE TOTAL	2616	\$146,211	\$43,503	\$3,179	\$0	\$192,893	
	SALES TAX MATL MARKUP LABOR MARKUP	0.00% 0.00% 0.00%	\$0 \$0	\$0				
	EQUIPT MARKUP SUB MARKUP	0.00%		ŞU	\$0	\$0		
	TOTAL BEFORE COCONTINGENCY BOND	ONTINGENC 10.00% 0.00%	\$146,211	\$43,503	\$3,179	\$0	\$192,893 \$19,289 \$0	
	PROFIT	10.00%					\$19,289	
	JOB TOTAL						\$231,472	

Estimate: BLDG 3262 Date: 02-Dec-94
Description: RENOVATE HVAC SYSTEM COST ESTIMATE (Fan Coil System Using Project: LIMITED EEAP(HGR) Bid Date:

JOB TOTAL

Project: LIMITED EEAP(HGR) Bid Date:
Location: FORT BRAGG, N.C. Job #: 94013.04
Sq. footage: ******* City indx:Raleigh, NC

	Manhours	Matl	Labor	Equipment	Sub	Total
=======================================	=======		=======			========
A09 ELECTRICAL U02 SITEWORK U03 CONCRETE U15 MECHANICAL U16 ELECTRICAL	19 768 4 1818 7	\$567 \$6 \$189 \$145,264 \$185	\$403 \$14,942 \$36 \$28,027 \$95	\$0 \$3,179 \$0 \$0 \$0	\$00 \$90 \$\$ \$\$	\$970 \$18,127 \$225 \$173,291 \$280
TOTAL	2616	\$146,211	\$43,503	\$3,179	\$0	\$192,893
SALES TAX MATL MARKUP LABOR MARKUP EQUIPT MARKUP SUB MARKUP	0.00% 0.00% 0.00% 0.00% 0.00%	\$0 \$0	\$0	\$0	\$0	
TOTAL BEFORE CO CONTINGENCY BOND PROFIT	ONTINGENC 10.00% 0.00% 10.00%	\$146,211	\$43,503	\$3,179	\$0	\$192,893 \$19,289 \$0 \$19,289

\$231,472

```
LIFE CYCLE COST ANALYSIS SUMMARY STUDY: 3354ECO4
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID FY95 (92)
   INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3
   PROJECT NO. & TITLE: 94013.04 LES: ECO4 - HVAC RENOVATIONS
   FISCAL YEAR 95 DISCRETE PORTION NAME: ECO
   ANALYSIS DATE: 12-12-94 ECONOMIC LIFE 20 YEARS PREPARED BY: G.B. LOFLIN
   1. INVESTMENT
                                     95345.
   A. CONSTRUCTION COST $
                                     4767.
   B. SIOH $ 4767.
C. DESIGN COST $ 4767.
D. TOTAL COST (1A+1B+1C) $ 104879.
   E. SALVAGE VALUE OF EXISTING EQUIPMENT $
F. PUBLIC UTILITY COMPANY REBATE $
G. TOTAL INVESTMENT (1D - 1E - 1F)
                                                         0.
                                                                   104879.
   2. ENERGY SAVINGS (+) / COST (-)
   DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1994
                 UNIT COST SAVINGS ANNUAL $ DISCOUNT DISCOUNTED $/ MWH(1) MWH/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5)
       FUEL
                                 63. $ 2192.
-75. $ -1440.
0. $ 0.
0. $ 0.
0. $ 0.
0. $ 0.
-12. $ 1308.
       A. ELECT $ 34.95
                                                  2192. 15.08
                                                                               33062.
       B. DIST $ 19.18
                                                                               -26734.
                                                                18.57
       C. RESID $ .00
D. NAT G $ 13.44
                                                                21.02
                                                                                0.
                                                               18.58 $
16.83 $
17.38 $
14.88 $
                                                                                    0.
                                                               16.83 $
17.38 $
14.88 $
       E. COAL $ .00
F. PPG $ .00
                                                                                    0.
                                                                                    0.
       M. DEMAND SAVINGS
                                                                                8258.
       N. TOTAL
                                                                                14586.
   3. NON ENERGY SAVINGS(+) / COST(-)
      A. ANNUAL RECURRING (+/-)
                                                              14.88
$ 74234.
                                                                               4989.
           (1) DISCOUNT FACTOR (TABLE A)
           (2) DISCOUNTED SAVING/COST (3A X 3A1)
      B. NON RECURRING SAVINGS(+) / COSTS(-)
                                   SAVINGS(+) YR DISCNT
COST(-) OC FACTR
                                                                   DISCOUNTED
                                     COST(-) OC (1) (2)
                                                                   SAVINGS(+)/
                                                                   COST(-)(4)
                                                       (3)
       d. TOTAL
                                   $ 0.
      C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)$ 74234.
   4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))$
   5. SIMPLE PAYBACK PERIOD (1G/4)
                                                                            16.66 YEARS
   6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C)
                                                                          $ 88820.
   7. SAVINGS TO INVESTMENT RATIO
                                              (SIR) = (6 / 1G) =
                                                                              .85
      (IF < 1 PROJECT DOES NOT QUALIFY)
*** Project does not qualify for ECIP funding; 4,5,6 for information only.
```

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR):

N/A

Estimate: BLDG 3354 Date: 29-Nov-94
Description: RENOVATE HVAC SYSTEM COST ESTIMATE
Project: LIMITED EEAP(HGR) Bid Date:
Location: FORT BRAGG, N.C. Job #: 94013.04
Sq. footage: 19500 City indx:Raleigh, N

City indx:Raleigh, NC

Description

______ Manhours Matl Labor Equipment Sub Total

0913100280 FEEDER INSTALLATION, INCLUDING CONDUIT AND WIRE, 200 AMPERES 0.31 9.45 60.00 L.F. Unit values 6.71 0.00 16.16 0.00 18.36 Totals \$567 \$403 \$0 \$0 \$970 A09 ELECTRICAL 19 \$567 \$403 \$0 \$0 \$970

		=======	======		=======	========
Line #	Description					
	Manhours	Matl		Equipment		Total
			======		:=======	=======
0205543200	SITE REMOV	3.R	·	DED CONNECT	TION, 1000.00	T. 🗜
Unit values Totals	0.15 150.00	0.00	2.61 \$2,613	1.06 \$1,064	0.00	3.68
0207183600	HVAC DEMO	MECH EQP	T HEAVY I	ΓΕΜ		_
Unit values Totals	14.55 29.09	0.00 \$0	314.87 \$630		2.00 0.00 \$0	314.87
0208400600	REMOVE PI	PE INSULA	TION UP TO	O 4" DIAMET		
Unit values Totals	0.07 49.70	0.00 \$0	1.63 \$1,144			1.83
0208401000	REMOVE INS		FROM PIPE	FITTING, U	P TO 4" 150.00	En
Unit values Totals	0.20 30.00	0.00	4.60 \$689	0.56 \$84	0.00	
0222541900	TAMPING TF	RENCH B'F	ILL, VIBRA	ATING PLATE		2 11
Unit values Totals	0.09 0.40	0.00 \$0	1.44 \$6	0.55 \$2		C.Y. 1.99 \$8
0222582800	TRENCH EXC	CVTNG 40H	CHNTRNCH	HR&BKFL 12"		
Unit values Totals	0.01 0.60	0.00 \$0		0.20 \$12		0.39
0260120200	BEDDING, F BANK	OR PIPE	IN TRENCH	SAND, DEAD		
Unit values Totals	0.16 0.24	3.79 \$6	2.79 \$4	1.13	0.00 \$0	C.Y. 7.71 \$12
0260120500	BEDDING, F	LACING IN	N TRENCH			
Unit values Totals	0.09	0.00 \$0	1.44	0.55 \$1	1.50 0.00 \$0	1.99 \$3
U02 SITEWORK	261	\$6	\$5,100	\$1,302	\$0	\$6,408

	========					=========
Line #	Description	on				
	Manhours	Matl	Labor E	Equipment	Sub	Total
=======================================	=======					
0331305010	6" THICK	REINFORCE	SLAB FOR	R HVAC EQUI		C D
Unit values Totals	0.02 3.12	1.45 \$189	0.28 \$36	0.00	130.00 0.00 \$0	1.73
U03 CONCRETE	4	\$189	\$36	\$0	\$0	\$225

Line #	Description					
	Manhours	Matl	Labor	Equipment	Sub	Total
=======================================			======	=======	=======	
1517010620	BLACK STEE 2-1/2" DI	EL PIPE, S W/CPLGS&	CHEDULE HNGRS 10	40, THREADE	D, 1200.00	L.F.
Unit values Totals	0.32 384.00	6.64 \$7,972	4.93 \$5,917	OC 0.00	0.00 \$0	11.57 \$13,889
1556101280	HEAT TRANS	F PKG COMP	LETE HOT GPM	WTR 180 <f-< td=""><td>200<f 1.00</f </td><td>Ea.</td></f-<>	200 <f 1.00</f 	Ea.
Unit values Totals	48.00 1 48.00	7382.60 \$17,383	771.38 \$771	0.00 \$0	0.00 \$0	18153.98 \$18,154
1556517150	PIPE CVR F	BGL 1.5"T	HK ASJ 2		1000 00	T ***
Unit values Totals	0.09 106.80	1.65 \$1,978	1.30 \$1,561	0.00 \$0	1200.00 0.00 \$0	2.95 \$3,539
1556519680	PIPE CVR U	RTHAN ULT	V ELL 1.9	5W 2-1/2" I	PS 100 00	Eo
Unit values Totals	0.17 16.80	6.49 \$649	2.47 \$247	0.00 \$0	0.00	8.96 \$896
1556519840	PIPE CVR U	RETH UV T	EE/VLV 1	.5"W 2-1/2"	IPS 50.00	E-
Unit values Totals	0.24 12.10	7.79 \$390	3.54 \$177	0.00 \$0	0.00	11.33
1562408110	VALVE BUTT	ERFLY SYS	TEM BALAN	NCING & SHU	r-OFF 2 ' 25.00	
Unit values Totals	0.73 18.18	23.48 \$587	12.40 \$310	0.00 \$0	0.00	35.88 \$897
1562450160	HVAC MIXIN	G VALVE 2	" IPS		2 22	n -
Unit values Totals	1.00	889.11 \$1,778	17.24 \$34	0.00 \$0	2.00 0.00 \$0	906.35 \$1,812
1562600390	PRESSURE R 2" SIZE	EG , HOT	WTR, THRI	DED IRON	1.00	T-
Unit values Totals	0.73 0.73	339.66 \$340	12.40 \$12	0.00 \$0	0.00	352.06 \$352
1562600990	PRESSURE R IRON 2" SI	EG PROCESS	S STM WET	SUPER THRI		Fo
Unit values Totals	0.73 0.73	419.58 \$420	12.40 \$12	0.00 \$0	1.00 0.00 \$0	431.98 \$432
1571500110	FAN COIL A WTR 3/4 TO		. CABINET	MTD FLTRS	CHILL 25.00	Fa
Unit values	2.29	649.35	35.09	0.00	0.00	684.44

						_
Totals	57.15	\$16,234	\$877	\$0	\$0	\$17,111
1571900510	WATER CH	ILLER RECIF	ROCATING AIR	COOLED 25	TON 1.00	Ea.
Unit values Totals	100.00 100.00	12287.70 \$12,288	1633.50 \$1,634	0.00 \$0	0.00	13921.20 \$13,922

MeansData for Lotus

30-Nov-94

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Line #	Description							
	Manhours	Matl	Labor	Equipment	Sub	Total		
=======================================						=========		
U15 MECHANICAL	747	\$60,019	\$11,552	\$0	\$0	\$71,571		
1633600750	SAFETY SW	NF GEN DU	JTY 240V	3P200AMP		_		
Unit values Totals	6.15 6.15	185.20 \$185	95.32 \$95	0.00 \$0	1.00 0.00 \$0	Ea. 280.52 \$280		
U16 ELECTRICAL	7	\$185	\$95	\$0	\$0	\$280		

_============	=======	=======	=======	=========	========	
Line #	Descripti	.on				
	Manhours	Matl	Labor	Equipment	Sub	Total
		· • • • • • • • • • • • • • • • • • • •				
ESTIMATE TOTAL	1038	\$60,966	\$17,186	\$1,302	\$0	\$79,454
SALES TAX MATL MARKUP	0.00% 0.00%	\$0 \$0				
LABOR MARKUP EQUIPT MARKUP	0.00%	+ -	\$0	\$0		
SUB MARKUP	0.00%				\$0	
TOTAL BEFORE C CONTINGENCY BOND	ONTINGENC 10.00% 0.00%	\$60,966	\$17,186	\$1,302	\$0	\$79,454 \$7,945 \$0
PROFIT	10.00%					\$7,945
JOB TOTAL						\$95,345

Estimate: BLDG 3354 Date: 29-Nov-94
Description: RENOVATE HVAC SYSTEM COST ESTIMATE
Project: LIMITED EEAP(HGR) Bid Date:
Location: FORT BRAGG, N.C. Job #: 94013.04

Location: FORT BRAGG, N.C. Job #: 94013.04 Sq. footage: 19500 City indx:Raleigh, NC

CIIMARY

SUMMARY						
	Manhours	Matl	Labor	Equipment	Sub	Total
					=====:	
A09 ELECTRICAL U02 SITEWORK U03 CONCRETE U15 MECHANICAL U16 ELECTRICAL	19 261 4 747 7	\$567 \$6 \$189 \$60,019 \$185	\$403 \$5,100 \$36 \$11,552 \$95	\$0 \$1,302 \$0 \$0 \$0	\$\$\$ \$\$\$ \$\$\$ \$\$	\$970 \$6,408 \$225 \$71,571 \$280
TOTAL	1038	\$60,966	\$17,186	\$1,302	\$0	\$79,454
SALES TAX MATL MARKUP LABOR MARKUP EQUIPT MARKUP SUB MARKUP	0.00% 0.00% 0.00% 0.00% 0.00%	\$0 \$0	\$0	\$0	\$0	
TOTAL BEFORE CO CONTINGENCY BOND PROFIT	ONTINGENC 10.00% 0.00% 10.00%	\$60,966	\$17,186	\$1,302	\$0	\$79,454 \$7,945 \$0 \$7,945
JOB TOTAL						\$95,345

```
LIFE CYCLE COST ANALYSIS SUMMARY
                                                   STUDY: 3637ECO4
LCCID FY95 (92)
     ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP)
INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 94013.04 LES: ECO4 - HVAC RENOVATIONS
FISCAL YEAR 95 DISCRETE PORTION NAME: ECO
ANALYSIS DATE: 12-12-94 ECONOMIC LIFE 20 YEARS PREPARED BY: G.B. LOFLIN
1. INVESTMENT
A. CONSTRUCTION COST $
                             76979.
                             3849.
                         $
B. SIOH
C. DESIGN COST $
D. TOTAL COST (1A+1B+1C) $
                               3849.
                            84677.
E. SALVAGE VALUE OF EXISTING EQUIPMENT $
                                              0.
F. PUBLIC UTILITY COMPANY REBATE
                                               Ο.
G. TOTAL INVESTMENT (1D - 1E - 1F)
                                                       84677.
2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1994
           UNIT COST SAVINGS ANNUAL $ DISCOUNT DISCOUNTED
            $/ MWH(1) MWH/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5)
    FUEL
                          -60.
128.
0.
                            -60. $
128. $
0. $
0. $
0. $
0. $
67. $
   A. ELECT $ 34.95
                                        -2111.
                                                     15.08
                                                                 -31828.
   B. DIST $ 19.18
                                         2449.
                                                    18.57
                                                                 45483.
   C. RESID $ .00
                                         0.
                                                    21.02
                                                                  0.
                                          0.
0.
   D. NAT G $ 13.44
                                                    18.58
                                                                      Ο.
                                                    16.83
17.38
   E. COAL $ .00
F. PPG $ .00
                                                                   0.
0.
                                                     17.38
                                        555.
894.
                                                                 8258.
   M. DEMAND SAVINGS
                                                     14.88
   N. TOTAL
                                                                  21913.
3. NON ENERGY SAVINGS(+) / COST(-)
   A. ANNUAL RECURRING (+/-)
                                                                  100.
       (1) DISCOUNT FACTOR (TABLE A)
                                                   14.88
       (2) DISCOUNTED SAVING/COST (3A X 3A1)
                                                                   1488.
   B. NON RECURRING SAVINGS(+) / COSTS(-)
                           SAVINGS(+) YR
COST(-) OC
                                             DISCNT
                                                        DISCOUNTED
                             COST(-)
              ITEM
                                             FACTR
                                                        SAVINGS(+)/
                                (1)
                                        (2)
                                                        COST(-)(4)
                                             (3)
   d. TOTAL
                           $
                                  0.
                                                              Ο.
   C. TOTAL NON ENERGY DISCOUNTED SAVINGS (+) /COST (-) (3A2+3Bd4)$ 1488.
4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))$
                                                                   994.
5. SIMPLE PAYBACK PERIOD (1G/4)
                                                              85.22 YEARS
6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C)
                                                                23401.
7. SAVINGS TO INVESTMENT RATIO
                                                               .28
                                     (SIR) = (6 / 1G) =
   (IF < 1 PROJECT DOES NOT QUALIFY)
8. ADJUSTED INTERNAL RATE OF RETURN (AIRR):
                                                        -3.41 %
```

Estimate: BLDG 3637 Date: 29-Nov-94 Description: RENOVATE HVAC SYSTEM COST ESTIMATE

Project: LIMITED EEAP(HGR) Bid Date:
Location: FORT BRAGG, N.C. Job #: 94013.04
Sq. footage: 12000 City indx:Raleigh, NC

Line # Description

_____ Manhours Matl Labor Equipment Sub Total

0913100280 FEEDER INSTALLATION, INCLUDING CONDUIT AND WIRE, 200 AMPERES 60.00 L.F. 9.45 6.71 0.00 \$567 \$403 \$0 Unit values 0.31 9.45 0.00 16.16 Totals 18.36 \$0 \$0 \$970

A09 FLECTRICAL 19 \$567 \$403 \$0 \$0 \$970

=======================================		=======	======		=======	========
Line #	Description	on				
				Equipment		
=======================================					======	
0205543200	SITE REMOV					L.F.
Unit values Totals	0.15	0 00	2.61 \$1,829	1.06 \$745	0.00	3.68
0207183600	HVAC DEMO,	MECH EQPI	HEAVY I	rem	1.00	m _e
Unit values Totals	14.55 14.55	0.00 \$0	314.87 \$315	0.00 \$0	0.00	314.87 \$315
0208400600	REMOVE PIF	E INSULAT	ION UP TO	O 4" DIAMETE		יד ד
Unit values Totals	0.07 35.50	0.00 \$0		0.20 \$98		1.83
0208401000	REMOVE INS	מחדמ		FITTING, UP	700 00	F.
Unit values Totals	0.20	0.00	4.60 \$460	0.56 \$56	0.00	5.16
0222541900	TAMPING TR	ENCH B'FI	LL, VIBRA	ATING PLATE,		C V
Unit values Totals	0.09 0.40	0.00 \$0	1.44 \$6	0.55 \$2	0.00	C.Y. 1.99 \$8
0222582800	TRENCH EXC	VTNG 40HP	CHNTRNC	HR&BKFL 12"W		,
Unit values Totals	0.01 0.60	0.00 \$0	0.20 \$12	0.20 \$12	60.00 0.00 \$0	0.39
0260120200	BEDDING, F BANK	OR PIPE I	N TRENCH	SAND, DEAD		CV
Unit values Totals	0.16 0.24	3.79 \$6	2.79 \$4	1.13 \$2	0.00	C.Y. 7.71 \$12
0260120500	BEDDING, P	LACING IN	TRENCH		7 50	G V
Unit values Totals	0.09 0.13	0.00 \$0	1.44	0.55 \$1	1.50 0.00 \$0	1.99 \$3
U02 SITEWORK	177	\$6	\$3,445	\$916	\$0	\$4,367

=======================================	========	========	=======	=======	======	========
Line #	Description	on				
	Manhours	Matl	Labor E	quipment	Sub	Total
*======================================		========	=======	========	======:	========
0331305010	6" THICK	REINFORCED	SLAB FOR	HVAC EQUI	PMENT	C P
Unit values Totals	0.02 2.64	1.45 \$160	0.28 \$31	0.00 \$0	0.00	1.73 \$191
U03 CONCRETE	3	\$160	\$31	\$0	\$0	\$191

=======================================			========	========	======	
Line #	Description	on				
			•	nuipment		Total
=======================================	========	=======================================	========	:=======	======	=======
1517010620 Unit values	BLACK STER 2-1/2" DE 0.32 288.00	I W/CPLGS&F 6.64	CHEDULE 40, HNGRS 10'00 4.93 \$4,438	THREADED,	900.00	L.F. 11.57 \$10,417
Totals				·		\$10,41/
1556101280 Unit values Totals	15# STM :	S PKG COMPI 2 PUMP 130 17382.60 \$17,383	GPM 771 38	0.00 \$0	1.00	Ea. 18153.98 \$18,154
1556517150	PIPE CVR I	FBGL 1.5"TH	HK ASJ 2-1/	'2"IPS		
Unit values Totals	0.09 80.10	1.65 \$1,484	1.30 \$1,171	0.00 \$0	900.00 0.00 \$0	L.F. 2.95 \$2,655
1556519680	PIPE CVR (JRTHAN ULTV	7 ELL 1.5W	2-1/2" IPS		D-
Unit values Totals	0.17 10.08	6.49 \$390	2.47 \$148	0.00 \$0	60.00 0.00 \$0	8.96
1556519840	PIPE CVR (JRETH UV TE	EE/VLV 1.5"	W 2-1/2" I		n-
Unit values Totals	0.24 9.68	7.79 \$312	3.54 \$142	0.00 \$0	40.00 0.00 \$0	11.33
1562408110	VALVE BUTT	TERFLY SYST	EM BALANCI		OFF 2 '	
Unit values Totals			12.40 \$186		0.00	35.88
1562450160	HVAC MIXIN	IG VALVE 2"	IPS		2.00	Eo
Unit values Totals	1.00		17.24 \$34	0.00 \$0	0.00	906.35 \$1,812
1562600390	PRESSURE F 2" SIZE	REG , HOT W	TR, THRDED	IRON	1.00	To.
Unit values Totals		339.66 \$340			0.00	
1562600990	PRESSURE FIRON 2" SI		STM WET/S	UPER THRDE	1.00	To.
Unit values Totals	0.73 0.73		12.40 \$12	0.00 \$0	0.00	431.98 \$432
1571500110	FAN COIL A		CABINET M	TD FLTRS CI	HILL 15.00	Fa
Unit values	2.29		35.09	0.00	0.00	684.44

12-Dec-94

MeansData for Lotus

Page 5

Totals

34.29 \$9,740 \$526 \$0 \$0 \$10,266

1571900510

WATER CHILLER RECIPROCATING AIR COOLED 15 TON

Unit values

100.00 11088.90

1633.50

0.00

1.00 Ea. 0.00 12722.40

Totals

100.00 \$11,089

\$1,634

\$0

\$0 \$12,723

\$0 \$280

=======================================		=======	=======		======:	=======
Line #	Description	on				
	Manhours	Matl	Labor	Equipment	Sub	Total
U15 MECHANICAL	585	\$49,267	\$9,074	\$0	\$0	\$58,341
1633600750	SAFETY SW	NF GEN DU	JTY 240V 3	3P200AMP		_
Unit values Totals	6.15 6.15	185.20 \$185	95.32 \$95	0.00 \$0	1.00 0.00 \$0	Ea. 280.52 \$280

U16 ELECTRICAL 7 \$185 \$95 \$0

=======================================		========	=======		=======	=======
Line #	Descripti	on				
	Manhours	Matl	Labor	Equipment	Sub	Total
			======:		======:	=======
ESTIMATE TOTAL	791	\$50,185	\$13,048	\$916	\$0	\$64,149
SALES TAX MATL MARKUP LABOR MARKUP	0.00% 0.00% 0.00%	\$0 \$0	¢o			
EQUIPT MARKUP SUB MARKUP	0.00%		\$0	\$0	\$0	
TOTAL BEFORE CONTINGENCY BOND PROFIT	ONTINGENC 10.00% 0.00% 10.00%	\$50,185	\$13,048	\$916	\$0	\$64,149 \$6,415 \$0 \$6,415
JOB TOTAL						\$76,979

Date: 29-Nov-94

Estimate: BLDG 3637 Date: 29-Nov Description: RENOVATE HVAC SYSTEM COST ESTIMATE Project: LIMITED EEAP(HGR) Bid Date:

Project: Location:

Location: FORT BRAGG, N.C. Job #: Sq. footage: 12000 City ind

94013.04

City indx:Raleigh, NC

by. rootage.	12000		crey milan	arcigii, we	•					
=======================================	SUMMARY									
	Manhours	Matl	Labor	Equipment	Sub	Total				
				=========	======					
A09 ELECTRICAL U02 SITEWORK U03 CONCRETE U15 MECHANICAL U16 ELECTRICAL	177 3	\$567 \$6 \$160 \$49,267 \$185	\$403 \$3,445 \$31 \$9,074 \$95	\$0 \$916 \$0 \$0 \$0	\$\$\$ \$\$\$ \$\$\$ \$\$	\$970 \$4,367 \$191 \$58,341 \$280				
TOTAL	791	\$50,185	\$13,048	\$916	\$0	\$64,149				
SALES TAX MATL MARKUP LABOR MARKUP EQUIPT MARKUP SUB MARKUP	0.00% 0.00% 0.00% 0.00% 0.00%	\$0 \$0	\$0	\$0	¢0					
					\$0					
TOTAL BEFORE CO CONTINGENCY BOND PROFIT	ONTINGENC 10.00% 0.00% 10.00%	\$50,185	\$13,048	\$916	\$0	\$64,149 \$6,415 \$0 \$6,415				
JOB TOTAL						\$76,979				

```
LIFE CYCLE COST ANALYSIS SUMMARY
                                                               STUDY: 3642ECO4
         ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP)
                                                               LCCID FY95 (92)
    INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3
    PROJECT NO. & TITLE: 94013.04 LES: ECO4 - HVAC RENOVATIONS
    FISCAL YEAR 95 DISCRETE PORTION NAME: ECO
    ANALYSIS DATE:
                     12-12-94 ECONOMIC LIFE 20 YEARS PREPARED BY: G.B. LOFLIN
    1. INVESTMENT
    A. CONSTRUCTION COST $
                                    95345.
    B. SIOH $ 4767.
C. DESIGN COST $ 4767.
D. TOTAL COST (1A+1B+1C) $ 104879.
    E. SALVAGE VALUE OF EXISTING EQUIPMENT $
                                                      0.
    F. PUBLIC UTILITY COMPANY REBATE
                                                       Ο.
    G. TOTAL INVESTMENT (1D - 1E - 1F)
                                                            Ś
                                                                104879.
    2. ENERGY SAVINGS (+) / COST (-)
    DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1994
                UNIT COST SAVINGS ANNUAL $ DISCOUNT DISCOUNTED $/MWH(1) MWH/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5)
        FUEL
                                  50.
-62.
                                  50. $ 1730.
-62. $ -1198.
0. $ 0.
0. $ 0.
0. $ 0.
0. $ 0.
-13. $ 555.
-13. $ 1087.
        A. ELECT $ 34.95
                                                              15.08
                                                                           26089.
        B. DIST $ 19.18
                                                             18.57
                                                                           -22247.
        C. RESID $ .00
D. NAT G $ 13.44
                                                                            0.
                                                             21.02
                                                            18.58
16.83
17.38
                                                                                0.
        E. COAL $ .00
F. PPG $ .00
                                                                                Ο.
                                                                                0.
                                                                           8258.
        M. DEMAND SAVINGS
                                                              14.88
        N. TOTAL
                                                                            12101.
    3. NON ENERGY SAVINGS(+) / COST(-)
       A. ANNUAL RECURRING (+/-)
                                                                            843.
           (1) DISCOUNT FACTOR (TABLE A)
                                                          14.88
                                                                       $ 12545.
           (2) DISCOUNTED SAVING/COST (3A X 3A1)
       B. NON RECURRING SAVINGS(+) / COSTS(-)
                                  SAVINGS(+) YR DISCNT
COST(-) OC FACTR
                                                                 DISCOUNTED
                                    VINGS ( - )
                    ITEM
                                                                 SAVINGS(+)/
                                       (1)
                                               (2)
                                                     (3)
                                                                 COST(-)(4)
        d. TOTAL
                                  $
                                         0.
       C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)$ 12545.
    4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))$
    5. SIMPLE PAYBACK PERIOD (1G/4)
                                                                        54.34 YEARS
    6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C)
                                                                       $ 24646.
    7. SAVINGS TO INVESTMENT RATIO
                                             (SIR) = (6 / 1G) =
                                                                           .23
        (IF < 1 PROJECT DOES NOT QUALIFY)
**** Project does not qualify for ECIP funding; 4,5,6 for information only.
```

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR):

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N/A

Estimate: BLDG 3642 Date: 29-Nov-94
Description: RENOVATE HVAC SYSTEM COST ESTIMATE
Project: LIMITED EEAP(HGR) Bid Date:
Location: FORT BRAGG, N.C. Job #: 94013.04
Sq. footage: 19500 City indx:Raleigh, NC

Line # Description

	Manhours	Matl	Labor E	Equipment	Sub	Total
			=======	=======	:	========
0913100280	FEEDER INST	•	INCLUDIN	G CONDUIT		T 17
Unit values Totals	0.31 18.36	9.45 \$567	6.71 \$403	0.00 \$0	60.00 0.00 \$0	16.16 \$970
A09 ELECTRICAL	19	\$567	\$403	\$0	\$0	\$970

		=======			=======	========
Line #	Description	n				
	Manhours	Matl	Labor	Equipment	Sub	Total
=======================================		=======			======	========
0205543200 Unit values Totals	SITE REMOV 4"DIAMETE 0.15 150.00	סי		DED CONNECT 1.06 \$1,064	1000 00	L.F. 3.68 \$3,677
0207183600	HVAC DEMO,	MECH EQPT	HEAVY I	TEM		
Unit values Totals	14.55 29.09	0.00 \$0	314.87 \$630	0.00 \$0	2.00 0.00 \$0	Ton 314.87 \$630
0208400600	REMOVE PIP	E INSULAT	CION UP TO	4" DIAMET	ER PIPE 700.00	
Unit values Totals	0.07 49.70	0.00 \$0	1.63 \$1,144		0.00	1.83 \$1,281
0208401000	REMOVE INS		ROM PIPE	FITTING, U	P TO 4" 150.00	
Unit values Totals	0.20 30.00	0.00	4.60 \$689	0.56 \$84	0.00	5.16 \$773
0222541900	TAMPING TR	ENCH B'FI	LL, VIBRA	TING PLATE		O V
Unit values Totals	0.09 0.40	0.00 \$0	1.44 \$6	0.55 \$2	0.00	C.Y. 1.99 \$8
0222582800	TRENCH EXC	VTNG 40HF	CHNTRNCH	IR&BKFL 12"		T D
Unit values Totals	0.01 0.60	0.00 \$0	0.20 \$12	0.20 \$12		0.39 \$24
0260120200	BEDDING, F BANK	OR PIPE I	N TRENCH	SAND, DEAD	OR 1.50	CV
Unit values Totals	0.16 0.24	3.79 \$6	2.79 \$4	1.13 \$2	0.00	7.71 \$12
0260120500	BEDDING, P	LACING IN	TRENCH		7 50	G V
Unit values Totals	0.09 0.13	0.00 \$0	1.44 \$2	0.55 \$1	1.50 0.00 \$0	1.99
U02 SITEWORK	261	\$6	\$5,100	\$1,302	\$0	\$6,408

=======================================	========			========	=======	
Line #	Description	on				
	Manhours	Matl :	Labor E	quipment	Sub	Total
=======================================	=======				======	=======================================
0331305010	6" THICK	REINFORCED	SLAB FOR	HVAC EQUII	PMENT 130.00	SF
Unit values Totals	0.02 3.12	1.45 \$189	0.28 \$36	0.00 \$0	0.00	1.73 \$225
U03 CONCRETE	4	\$189	\$36	\$0	\$0	\$225

Line #	Description								
	Manhours	Matl		Equipment					
==========	=======================================		=======			========			
1517010620	BLACK STER	EL PIPE, S	CHEDULE 4	0, THREADE	D,	I. F			
Unit values Totals	2-1/2" D3 0.32 384.00	6.64 \$7,972	4.93 \$5,917	0.00	0.00	11.57 \$13,889			
1556101280						Ea			
Unit values Totals	48.00	\$17,382.60 \$17,383	771.38 \$771	0.00	0.00	18153.98 \$18,154			
1556517150				•	1200.00	т. 🖬			
Unit values Totals	0.09 106.80	1.65 \$1,978	1.30 \$1,561	0.00 \$0	0.00	2.95 \$3,539			
1556519680				·	100 00	E a			
Unit values Totals	0.17 16.80	6.49 \$649	2.47 \$247	0.00 \$0	0.00	8.96 \$896			
1556519840					E0 00	En.			
Unit values Totals	0.24 12.10	7.79 \$390	3.54 \$177	0.00 \$0	0.00	11.33			
1562408110	VALVE BUTT	CERFLY SYS	TEM BALAN	CING & SHU					
Unit values Totals	0.73 18.18	23.48 \$587	12.40 \$310	0.00 \$0	25.00 0.00 \$0	35.88 \$897			
1562450160	HVAC MIXIN	IG VALVE 2	" IPS		2.00	77-			
Unit values Totals	1.00	889.11 \$1,778	17.24 \$34	0.00 \$0	0.00	906.35 \$1,812			
1562600390	PRESSURE R	REG , HOT	WTR, THRD	ED IRON	1 00	To.			
Unit values Totals		339.66 \$340		0.00 \$0		352.06 \$352			
1562600990	PRESSURE R IRON 2" SI		S STM WET	/SUPER THR		To.			
Unit values Totals	0.73 0.73	419.58		0.00 \$0	1.00 0.00 \$0	431.98			
1571500110	FAN COIL A		. CABINET	MTD FLTRS		Fo			
Unit values		649.35	35.09	0.00	25.00 0.00	684.44			

12-Dec-94

100.00

\$12,288

MeansData for Lotus

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\$13,922

Totals 57.15 \$16,234 \$877 \$0 \$0 \$17,111 1571900510 WATER CHILLER RECIPROCATING AIR COOLED 25 TON 1.00 Ea. Unit values Totals 100.00 12287.70 1633.50 0.00 0.00 13921.20

\$1,634

\$0

\$0

Line #	Description								
=======================================	Manhours	Matl	Labor	Equipment	Sub	Total			
U15 MECHANICAL	747	\$60,019	\$11,552	\$0	\$0	\$71,571			
1633600750	SAFETY SW	NF GEN DU	JTY 240V :	3P200AMP	1 00	T.			
Unit values Totals	6.15 6.15	185.20 \$185	95.32 \$95	0.00 \$0	1.00 0.00 \$0	280.52 \$280			
U16 ELECTRICAL	7	\$185	\$95	\$0	\$0	\$280			

==========	========			=========	=======:	
Line #	Descripti	.on				
	Manhours	Matl	Labor	Equipment	Sub	Total
=======================================		.======	=======	=======	=======	
ESTIMATE TOTAL	1038	\$60,966	\$17,186	\$1,302	\$0	\$79,454
SALES TAX MATL MARKUP	0.00% 0.00%	\$0 \$0				
LABOR MARKUP EQUIPT MARKUP SUB MARKUP	0.00% 0.00% 0.00%		\$0	\$0	\$0	
TOTAL BEFORE CONTINGENCY BOND PROFIT	ONTINGENC 10.00% 0.00% 10.00%	\$60,966	\$17,186	\$1,302	\$0	\$79,454 \$7,945 \$0 \$7,945
JOB TOTAL						\$95,345

Estimate: BLDG 3642 Date: 29-Nov-94
Description: RENOVATE HVAC SYSTEM COST ESTIMATE
Project: LIMITED EEAP(HGR) Bid Date:
Location: FORT BRAGG, N.C. Job #: 94013.04
Sq. footage: 19500 City indx:Raleigh, NC

SUMMARY

		OMMARI				
	Manhours	Matl	Labor	Equipment	Sub	Total
=======================================			======		= = = = = = = = = :	
A09 ELECTRICAL U02 SITEWORK U03 CONCRETE U15 MECHANICAL U16 ELECTRICAL	19 261 4 747 7	\$567 \$6 \$189 \$60,019 \$185	\$403 \$5,100 \$36 \$11,552 \$95	\$0 \$1,302 \$0 \$0 \$0	\$\$\$\$ \$\$\$\$ \$\$\$\$	\$970 \$6,408 \$225 \$71,571 \$280
TOTAL	1038	\$60,966	\$17,186	\$1,302	\$0	\$79,454
SALES TAX MATL MARKUP LABOR MARKUP	0.00% 0.00% 0.00%	\$0 \$0	\$0			
EQUIPT MARKUP SUB MARKUP	0.00% 0.00%			\$0	\$0	
TOTAL BEFORE CO CONTINGENCY BOND PROFIT	ONTINGENC 10.00% 0.00% 10.00%	\$60,966	\$17,186	\$1,302	\$0	\$79,454 \$7,945 \$0 \$7,945
JOB TOTAL						\$95,345

```
LIFE CYCLE COST ANALYSIS SUMMARY STUDY: 3962ECO4
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID FY95 (92)
INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 94013.04 LES: ECO4 - HVAC RENOVATIONS FISCAL YEAR 95 DISCRETE PORTION NAME: ECO
ANALYSIS DATE: 12-13-94 ECONOMIC LIFE 20 YEARS PREPARED BY: G.B. LOFLIN
1. INVESTMENT
A. CONSTRUCTION COST $ 95345.
B. SIOH $ 4767.
C. DESIGN COST $ 4767.
D. TOTAL COST (1A+1B+1C) $ 104879.
F. PUBLIC UTILITY COMPANY REBATE $
G. TOTAL INVESTMENT (1D - 1E - 1F)
                                                                              104879.
2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1994
                 UNIT COST SAVINGS ANNUAL $ DISCOUNT DISCOUNTED $/ MWH(1) MWH/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5)
     FUEL
                                    -62. $ -2174.
373. $ 7163.
0. $ 0.
0. $ 0.
0. $ 0.
0. $ 0.
311. $ 5544.
                                                                        15.08
18.57
21.02
18.58
16.83
17.38
14.88
     A. ELECT $ 34.95
B. DIST $ 19.18
C. RESID $ .00
D. NAT G $ 13.44
                                                                                           -32777.
                                                                                            133016.
                                                                                                   0.
                                                                                                   0.
     E. COAL $ .00
F. PPG $ .00
M. DEMAND SAVINGS
                                                                                                  0.
                                                                                                  0.
                                                                                             8258.
     N. TOTAL
                                                                                           108498.
3. NON ENERGY SAVINGS(+) / COST(-)
    A. ANNUAL RECURRING (+/-)
                                                                                           4750.
          (1) DISCOUNT FACTOR (TABLE A)
(2) DISCOUNTED SAVING/COST (3A X 3A1)
                                                                    14.88
                                                                                      $ 70684.
    B. NON RECURRING SAVINGS(+) / COSTS(-)
                                      SAVINGS(+) YR DISCNT DISCOUNTED

COST(-) OC FACTR SAVINGS(+)/

(1) (2) (3) COST(-)(4)
                     ITEM
     d. TOTAL
                                       $
                                         0.
    C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)$ 70684.
4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))$
5. SIMPLE PAYBACK PERIOD (1G/4)
                                                                                        10.19 YEARS
6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C)
                                                                                     $ 179182.
7. SAVINGS TO INVESTMENT RATIO
                                                    (SIR) = (6 / 1G) =
                                                                                         1.71
    (IF < 1 PROJECT DOES NOT QUALIFY)
                                                                                        5.80 %
8. ADJUSTED INTERNAL RATE OF RETURN (AIRR):
```

Date: 29-Nov-94

Estimate: BLDG 3962 Date: 29-NovDescription: RENOVATE HVAC SYSTEM COST ESTIMATE
Project: LIMITED EEAP(HGR) Bid Date:
Location: FORT BRAGG, N.C. Job #: 94013
Sq. footage: 19500 City indx:Raleigh 94013.04 City indx:Raleigh, NC

Description

______ Manhours Matl Labor Equipment Sub

0913100280 FEEDER INSTALLATION, INCLUDING CONDUIT AND WIRE, 200 AMPERES 60.00 L.F. 6.71 \$403 Unit values 0.31 0.00 0.00 16.16 9.45 Totals 18.36 \$567 \$0 \$0 \$970 A09 ELECTRICAL 19 \$567 \$403

\$0

\$0

\$970

		=======	=======	========	=======	========
Line #	Description	on				
			Labor	Equipment	Sub	Total
=======================================	========	======:			======	========
0205543200	SITE REMOV	VAL, STEEL	PIPE, WEL	DED CONNECT	ION,) I. E
Unit values Totals	0.15 150.00	0.00 \$0	2.61 \$2,613	1.06 \$1,064	0.00	3.68 3.677
0207183600	HVAC DEMO	MECH EQP	L HEAVA I	TEM	2.00	
Unit values Totals	14.55 29.09	0.00 \$0	314.87 \$630	0.00 \$0	0.00	314.87
0208400600	REMOVE PI	PE INSULAT	TION UP TO	O 4" DIAMET		
Unit values Totals	0.07 49.70	0.00 \$0	1.63 \$1,144	0.20 \$137	0.00	1.83 \$1,281
0208401000	REMOVE INS	SULATION E	FROM PIPE	FITTING, U	P TO 4"	. Fo
Unit values Totals	0.20 30.00	0.00	4.60 \$689	0.56 \$84	0.00	5.16 \$773
0222541900						- C 17
Unit values Totals	0.09 0.40	0.00 \$0	1.44	0.55 \$2	4.50 0.00 \$0	C.Y. 1.99 \$8
0222582800	TRENCH EXC	CVTNG 40H	CHNTRNC	HR&BKFL 12"V	724"D	. 7 . 79
Unit values Totals	0.01 0.60	0.00 \$0	0.20 \$12	0.20 \$12	0.00 \$0	0.39 \$24
0260120200	BEDDING, F BANK	OR PIPE 1	N TRENCH	SAND, DEAD	OR 7 50	C V
Unit values Totals	0.16 0.24	3.79 \$6	2.79 \$4	1.13 \$2	0.00 \$0	
0260120500	BEDDING, F	LACING IN	TRENCH			G V
Unit values Totals	0.09 0.13	0.00 \$0	1.44	0.55 \$1	1.50 0.00 \$0	
U02 SITEWORK	261	\$6	\$5,100	\$1,302	\$0	\$6,408

					======	=========
Line #	Description	on				
	Manhours	Matl	Labor E	Equipment	Sub	Total
			:=====			========
0331305010	6" THICK	REINFORCEI	SLAB FOR	R HVAC EQUI		
Unit values Totals	0.02 3.12	1.45 \$189	0.28 \$36	0.00 \$0	130.00 0.00 \$0	1.73 \$225
U03 CONCRETE	4	\$189	\$36	\$0	\$0	\$225

		=======	=======	=========	=======	=======
Line #	Description	on				
	Manhours	Matl	Labor	Equipment	Sub	Total
=======================================	========	=======		========	======:	=======
1517010620	BLACK STEE	L PIPE, S	CHEDULE 4	O, THREADEI),	ים ד
Unit values Totals	2-1/2" DI 0.32 384.00	6.64 \$7,972	4.93 \$5,917	0.00	0.00	11.57 \$13,889
1556101280						
Unit values Totals	48.00 1	7382.60	771.38	0.00 \$0	0.00	18153.98
1556517150					1200.00	T 17
Unit values Totals	0.09 106.80	1.65 \$1,978	1.30 \$1,561	0.00 \$0	0.00	2.95 \$3,539
1556519680						E.
Unit values Totals	0.17 16.80	6.49 \$649	2.47 \$247	0.00 \$0	0.00	8.96 \$896
1556519840				•	F0 00	E-a
Unit values Totals	0.24 12.10	7.79 \$390	3.54 \$177	0.00 \$0	0.00	11.33 \$567
1562408110						
Unit values Totals	0.73 18.18	23.48 \$587	12.40 \$310	0.00 \$0	0.00	35.88 \$897
1562450160	HVAC MIXIN	G VALVE 2'	' IPS		2.00	To.
Unit values Totals					0.00	906.35 \$1,812
1562600390	PRESSURE R 2" SIZE	EG , HOT V	NTR, THRD	ED IRON	1.00	E o
Unit values Totals	0.73 0.73	339.66 \$340	12.40 \$12	0.00 \$0	0.00	352.06 \$352
1562600990	PRESSURE R IRON 2" SI		S STM WET	/SUPER THRD	ED 1.00	Pa
Unit values Totals	0.73 0.73	419.58 \$420	12.40 \$12	0.00 \$0	0.00	431.98 \$432
1571500110	FAN COIL A WTR 3/4 TO		CABINET	MTD FLTRS	CHILL 25.00	Fa
Unit values	2.29	649.35	35.09	0.00	0.00	

MeansData for Lotus

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Totals 57.15 \$16,234 \$877 \$0 \$0 \$17,111

1571900510 WATER CHILLER RECIPROCATING AIR COOLED 25 TON
1.00 Ea.
Unit values 100.00 12287.70 1633.50 0.00 0.00 13921.20
Totals 100.00 \$12,288 \$1,634 \$0 \$0 \$13,922

Description	on					
Manhours	Matl	Labor	Equipment	Sub	Total	
747	\$60,019	\$11,552	\$0	\$0	\$71,571	
SAFETY SW	NF GEN DU	TY 240V	3P200AMP	7 00	77 -	
6 35	705 00	05 20	2 22			
6.15	\$185	\$95	\$0	\$0	\$280	
7	\$185	\$95	\$0	\$0	\$280	
	Manhours 747 SAFETY SW 6.15 6.15	747 \$60,019 SAFETY SW NF GEN DU 6.15 185.20 6.15 \$185	Manhours Matl Labor 747 \$60,019 \$11,552 SAFETY SW NF GEN DUTY 240V 3 6.15 185.20 95.32 6.15 \$185 \$95	Manhours Matl Labor Equipment 747 \$60,019 \$11,552 \$0 SAFETY SW NF GEN DUTY 240V 3P200AMP 6.15 185.20 95.32 0.00 6.15 \$185 \$95 \$0	Manhours Matl Labor Equipment Sub 747 \$60,019 \$11,552 \$0 \$0 SAFETY SW NF GEN DUTY 240V 3P200AMP 6.15 185.20 95.32 0.00 0.00 6.15 \$185 \$95 \$0 \$0	Manhours Matl Labor Equipment Sub Total 747 \$60,019 \$11,552 \$0 \$0 \$71,571 SAFETY SW NF GEN DUTY 240V 3P200AMP 6.15 185.20 95.32 0.00 0.00 280.52 6.15 \$185 \$95 \$0 \$0 \$280

	========	=======	=======	========	========	
Line #	Descripti	.on				
	Manhours	Matl	Labor	Equipment	Sub	Total
ESTIMATE TOTAL	1038	\$60,966	\$17,186	\$1,302	\$0	\$79,454
SALES TAX MATL MARKUP LABOR MARKUP EQUIPT MARKUP	0.00% 0.00% 0.00% 0.00%	\$0 \$0	\$0	^ 0		
SUB MARKUP	0.00%			\$0	\$0	
TOTAL BEFORE C CONTINGENCY BOND	ONTINGENC 10.00% 0.00%	\$60,966	\$17,186	\$1,302	\$0	\$79,454 \$7,945 \$0
PROFIT	10.00%					\$7,945
JOB TOTAL						\$95,345

JOB TOTAL

Estimate: BLDG 3962 Date: 29-Nov-94
Description: RENOVATE HVAC SYSTEM COST ESTIMATE
Project: LIMITED EEAP(HGR) Bid Date:
Location: FORT BRAGG, N.C. Job #: 94013.04
Sq. footage: 19500 City indx:Raleigh, N City indx:Raleigh, NC

	======= S	====== UMMARY	========		=======	=======
	Manhours	Matl	Labor	Equipment	Sub	Total
	======					
A09 ELECTRICAL U02 SITEWORK U03 CONCRETE U15 MECHANICAL U16 ELECTRICAL	19 261 4 747 7	\$567 \$6 \$189 \$60,019 \$185	\$403 \$5,100 \$36 \$11,552 \$95	\$0 \$1,302 \$0 \$0 \$0	\$0 \$0 \$0 \$5 \$5	\$970 \$6,408 \$225 \$71,571 \$280
TOTAL	1038	\$60,966	\$17,186	\$1,302	\$0	\$79,454
SALES TAX MATL MARKUP LABOR MARKUP EQUIPT MARKUP SUB MARKUP	0.00% 0.00% 0.00% 0.00% 0.00%	\$0 \$0	\$0	\$0	\$ 0	
TOTAL BEFORE CO CONTINGENCY BOND PROFIT	ONTINGENC 10.00% 0.00% 10.00%	\$60,966	\$17,186	\$1,302	\$0	\$79,454 \$7,945 \$0 \$7,945

\$95,345

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LIFE CYCLE COST ANALYSIS SUMMARY
        LIFE CYCLE COST ANALYSIS SUMMARY STUDY: 4137ECO4
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID FY95 (92)
   INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3
  PROJECT NO. & TITLE: 94013.04 LES: ECO4 - HVAC RENOVATIONS
  FISCAL YEAR 95 DISCRETE PORTION NAME: ECO
  ANALYSIS DATE: 12-12-94 ECONOMIC LIFE 20 YEARS PREPARED BY: G.B. LOFLIN
  1. INVESTMENT
                                    76979.
  A. CONSTRUCTION COST $
  B. SIOH $
C. DESIGN COST $
                                    3849.
  C. DESIGN COST $ 3849.
D. TOTAL COST (1A+1B+1C) $ 84677.
  E. SALVAGE VALUE OF EXISTING EQUIPMENT $
                                                     0.
  F. PUBLIC UTILITY COMPANY REBATE
                                                      Ο.
  G. TOTAL INVESTMENT (1D - 1E - 1F)
                                                                84677.
  2. ENERGY SAVINGS (+) / COST (-)
  DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1994
               UNIT COST SAVINGS ANNUAL $ DISCOUNT DISCOUNTED $/MWH(1) MWH/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5)
       FUEL
                               -61. $ -2128. 15.08
133. $ 2552. 18.57
0. $ 0. 21.02
0. $ 0. 18.58
0. $ 0. 16.83
0. $ 0. 17.38
$ 555. 14.88
72. $ 980.
      A. ELECT $ 34.95
                                                                           -32087.
      B. DIST $ 19.18
                                                                           47399.
       C. RESID $ .00
                                                                            0.
      D. NAT G $ 13.44
                                                                                0.
      E. COAL $ .00
F. PPG $ .00
                                                                                0.
                                                                                ο.
      M. DEMAND SAVINGS
                                                                            8258.
      N. TOTAL
                                                                            23571.
  3. NON ENERGY SAVINGS(+) / COST(-)
                                                        $
14.88
$
     A. ANNUAL RECURRING (+/-)
         (1) DISCOUNT FACTOR (TABLE A)
                                                                           1339.
          (2) DISCOUNTED SAVING/COST (3A X 3A1)
                                                                            19923.
     B. NON RECURRING SAVINGS(+) / COSTS(-)
                                 SAVINGS(+) YR DISCNT
COST(-) OC FACTR
                                                              DISCOUNTED SAVINGS(+)/
                                   VINGS (...
COST(-) OC
(1) (2)
                   ITEM
                                                   (3)
                                                               COST(-)(4)
      d. TOTAL
                                 $
                                   0.
                                                                     0.
     C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)$ 19923.
  4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))$ 2319.
  5. SIMPLE PAYBACK PERIOD (1G/4)
                                                                       36.52 YEARS
  6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C)
                                                                     $ 43494.
  7. SAVINGS TO INVESTMENT RATIO
                                            (SIR) = (6 / 1G) =
     (IF < 1 PROJECT DOES NOT QUALIFY)
*** Project does not qualify for ECIP funding; 4,5,6 for information only.
  8. ADJUSTED INTERNAL RATE OF RETURN (AIRR):
                                                                       N/A
```

\$0

\$0

\$0

\$970

\$970

Estimate: BLDG 4137 Date: 29-NovDescription: RENOVATE HVAC SYSTEM COST ESTIMATE
Project: LIMITED EEAP(HGR) Bid Date:
Location: FORT BRAGG, N.C. Job #: 94013.
Sq. footage: 12000 City indx:Raleigh 29-Nov-94 94013.04 City indx:Raleigh, NC Line # Description Manhours Matl Labor Equipment Sub 0913100280 FEEDER INSTALLATION, INCLUDING CONDUIT AND WIRE, 200 AMPERES 0.31 9.45 60.00 L.F. Unit values 6.71 0.00 16.16 0.00 Totals 18.36 \$567 \$403 \$0

A09 ELECTRICAL 19 \$567 \$403

=======================================	========	=======			======	=========
Line #	Descriptio					
	Manhours	Matl	Labor Ed	quipment	Sub	Total
=======================================					======	
0205543200	4 "DIAMETE	:R	PIPE, WELDER		700.00	L.F.
Unit values Totals	0.15 105.00	0.00 \$0	2.61 \$1,829	1.06 \$745	0.00 \$0	3.68 \$2,574
0207183600	•				1.00	Ton
Unit values Totals	14.55 14.55	0.00 \$0	314.87 \$315	0.00 \$0	0.00	314.87 \$315
0208400600	REMOVE PIP	E INSULAT	CION UP TO 4	" DIAMETE	R PIPE 500.00	
Unit values Totals	0.07 35.50	0.00 \$0	1.63 \$817	0.20 \$98	0.00	1.83 \$915
0208401000	DIAMETED D					
Unit values Totals	0.20 20.00	0.00	4.60 \$460	0.56 \$56	0.00	5.16
0222541900	TAMPING TR	ENCH B'FI	LL, VIBRATI	NG PLATE,		C.Y.
Unit values Totals	0.09 0.40	0.00 \$0	1.44 \$6	0.55 \$2	0.00	1.99
0222582800	TRENCH EXC	VTNG 40HP	CHNTRNCHR&	BKFL 12"W		
Unit values Totals	0.01 0.60	0.00 \$0	0.20 \$12	0.20 \$12	60.00 0.00 \$0	0.39
0260120200	BEDDING, F BANK	OR PIPE I	N TRENCH SA	ND, DEAD		C.Y.
Unit values Totals	0.16 0.24	3.79 \$6	2.79 \$4	1.13 \$2	0.00	7.71 \$12
0260120500	BEDDING, P	LACING IN	TRENCH		1.50	C V
Unit values Totals	0.09 0.13	0.00 \$0	1.44 \$2	0.55 \$1	0.00	1.99
U02 SITEWORK	177	\$6	\$3,445	\$916	\$0	\$4,367

=========	=========			=========	======	========
Line #	Description	on				
	Manhours	Matl	Labor 1	Equipment	Sub	Total
	========	========			======	========
0331305010	6" THICK	REINFORCE	SLAB FO	R HVAC EQUI	PMENT 110.00	S F
Unit values Totals	0.02 2.64	1.45 \$160	0.28 \$31	0.00 \$0	0.00	1.73
U03 CONCRETE	3	\$160	\$31	\$0	\$0	\$191

==========		=======	=======	========	======	=======
Line #	Description	on				
	Manhours			quipment		Total
		: = = = = = = = = = = = = = = = = = = =		========		========
1517010620 Unit values	BLACK STEE 2-1/2" DI 0.32	L PIPE, SO W/CPLGS&H	CHEDULE 40 HNGRS 10'0	THREADED, C 0.00		L.F. 11.57
Totals	288.00	\$5,979	\$4,438	\$0	\$0	\$10,417
1556101280	15# STM 2	PUMP 130	GPM	TR 180 <f-20< td=""><td>1.00</td><td></td></f-20<>	1.00	
Unit values Totals	48.00 1 48.00	7382.60 \$17,383				18153.98 \$18,154
1556517150	PIPE CVR F	BGL 1.5"TH	HK ASJ 2-1	/2"IPS	900.00	T. F
Unit values Totals	0.09 80.10	1.65 \$1,484	1.30 \$1,171		0.00	2.95 \$2,655
1556519680	PIPE CVR U	RTHAN ULTV	FLL 1.5W	2-1/2" IPS	60.00	Fa
Unit values Totals	0.17 10.08	6.49 \$390	2.47 \$148	0.00 \$0	0.00	8.96
1556519840	PIPE CVR U	RETH UV TE	EE/VLV 1.5	"W 2-1/2" I	9S 40.00	Fa
Unit values Totals	0.24 9.68	7.79 \$312	3.54 \$142	0.00 \$0	0.00	11.33
1562408110	VALVE BUTT	ERFLY SYST	EM BALANC	ING & SHUT-0	DFF 2 '	
Unit values Totals	0.73 10.91	23.48 \$352	12.40 \$186	0.00 \$0	0.00	35.88 \$538
1562450160	HVAC MIXIN	G VALVE 2"	IPS		2.00	P.a.
Unit values Totals	1.00	889.11 \$1,778	17.24 \$34	0.00 \$0	0.00	
1562600390	PRESSURE R 2" SIZE	EG , HOT W	TR, THRDEI	O IRON	1.00	F-2
Unit values Totals	0.73 0.73	339.66 \$340	12.40 \$12		0.00	
1562600990	PRESSURE R IRON 2" SI	EG PROCESS	STM WET/S	SUPER THRDEI		E-
Unit values Totals	0.73 0.73	419.58 \$420	12.40 \$12	0.00 \$0	1.00 0.00 \$0	431.98 \$432
1571500110	FAN COIL A WTR 3/4 TO		CABINET M	NTD FLTRS CH	HILL 15.00	Fa
Unit values	2.29	649.35	35.09	0.00	0.00	684.44

12-Dec-94		MeansD	ata for Lotu	ıs		Page	5
Totals	34.29	\$9,740	\$526	\$0	\$0	\$10,266	
1571900510	WATER CHI	LLER RECIP	ROCATING AIR	R COOLED 15	TON 1.00	Ea	
Unit values Totals	100.00	11088.90 \$11,089	1633.50 \$1,634	0.00 \$0	0.00	12722.40 \$12,723	

=======================================					======	
Line #	Description	on				
	Manhours	Matl	Labor	Equipment	Sub	Total
==========						=======
U15 MECHANICAL	585	\$49,267	\$9,074	\$0	\$0	\$58,341
1633600750	SAFETY SW	NF GEN D	UTY 240V 3	P200AMP		
					1.00	Ea.
Unit values	6.15	185.20	95.32	0.00	0.00	280.52
Totals	6.15	\$185	\$95	\$0	\$0	\$280
U16 ELECTRICAL	7	\$185	\$95	\$0	\$0	\$280

=========	========		======	========		
Line #	Descripti	on				
	Manhours	Matl	Labor	Equipment	Sub	Total
=======================================	=======================================					
ESTIMATE TOTAL	791	\$50,185	\$13,048	\$916	\$0	\$64,149
SALES TAX MATL MARKUP	0.00% 0.00% 0.00%	\$0 \$0	¢ o			
LABOR MARKUP EQUIPT MARKUP SUB MARKUP	0.00% 0.00% 0.00%		\$0	\$0	\$0	
TOTAL BEFORE C CONTINGENCY BOND	ONTINGENC 10.00% 0.00%	\$50,185	\$13,048	\$916	\$0	\$64,149 \$6,415
PROFIT	10.00%					\$0 \$6,415
JOB TOTAL						\$76,979

Estimate: BLDG 4137 Date: 29-Nov-94 Description: RENOVATE HVAC SYSTEM COST ESTIMATE

Project:

LIMITED EEAP(HGR) Bid Date:

JOB TOTAL

Location: FORT BRAGG, N.C. Job #: Sq. footage: 12000 City in

City indx:Raleigh, NC

	S	UMMARY				
	Manhours	Matl	Labor	Equipment	Sub	Total
					=======	========
A09 ELECTRICAL U02 SITEWORK U03 CONCRETE U15 MECHANICAL U16 ELECTRICAL	19 177 3 585 7	\$567 \$6 \$160 \$49,267 \$185	\$403 \$3,445 \$31 \$9,074 \$95	\$0 \$916 \$0 \$0 \$0	\$0 \$0 \$\$0 \$\$ \$\$	\$970 \$4,367 \$191 \$58,341 \$280
TOTAL	791	\$50,185	\$13,048	\$916	\$0	\$64,149
SALES TAX MATL MARKUP LABOR MARKUP EQUIPT MARKUP SUB MARKUP	0.00% 0.00% 0.00% 0.00%	\$0 \$0	\$0	\$0	\$0	
TOTAL BEFORE CO CONTINGENCY BOND PROFIT	ONTINGENC 10.00% 0.00% 10.00%	\$50,185	\$13,048	\$916	\$0	\$64,149 \$6,415 \$0 \$6,415

\$76,979

```
LIFE CYCLE COST ANALYSIS SUMMARY

ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP)

INSTALLATION & LOCATION: FORT BRAGG REGION NOS. 4 CENSUS: 3
PROJECT NO. & TITLE: 94013.04 LES: ECO4 - HVAC RENOVATIONS FISCAL YEAR 95 DISCRETE PORTION NAME: ECO
ANALYSIS DATE: 12-12-94 ECONOMIC LIFE 20 YEARS PREPARED BY: G.B. LOFLIN
1. INVESTMENT
A. CONSTRUCTION COST $ 14756.

B. SIOH $ 738.

C. DESIGN COST $ 738.

D. TOTAL COST (1A+1B+1C) $ 16232.
F. PUBLIC UTILITY COMPANY REBATE $
G. TOTAL INVESTMENT (1D - 1E - 1F)
E. SALVAGE VALUE OF EXISTING EQUIPMENT $
                                                                        16232.
2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1994
                UNIT COST SAVINGS ANNUAL $ DISCOUNT DISCOUNTED $/MWH(1) MWH/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5)
     FUEL
                                 -1. $ -39.
101. $ 1932.
0. $ 0.
0. $ 0.
0. $ 0.
0. $ 0.
100. $ 2448.
    A. ELECT $ 34.95
B. DIST $ 19.18
C. RESID $ .00
D. NAT G $ 13.44
                                                     -39.
1932.
                                                                   15.08
                                                                                     -585.
                                                                  15.08 $ $ 18.57 $ $ 21.02 $ 18.58 $ 16.83 $ 17.38 $ 14.88 $ $
                                                                                     35881.
                                                                                     0.
                                                      0.
0.
0.
555.
                                                                                          0.
    E. COAL $ .00
F. PPG $ .00
M. DEMAND SAVINGS
                                                                                         0.
                                                                                         0.
                                                                                   825.
43554.
     N. TOTAL
3. NON ENERGY SAVINGS (+) / COST (-)
                                                                             $ 3421.
   A. ANNUAL RECURRING (+/-)
         (1) DISCOUNT FACTOR (TABLE A)
                                                               14.88
         (2) DISCOUNTED SAVING/COST (3A X 3A1)
                                                                               $ 50900.
   B. NON RECURRING SAVINGS(+) / COSTS(-)
                                   SAVINGS(+) YR
COST(-) OC
                                                          DISCOUNTED
                                     AVINGS (COST(-) OC (2)
                   ITEM
                                                          FACTR
                                                                       SAVINGS(+)/
                                                         (3)
                                                                       COST(-)(4)
    d. TOTAL
                                   $ 0.
                                                                              0.
   C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)$ 50900.
4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))$
5. SIMPLE PAYBACK PERIOD (1G/4)
                                                                                  2.77 YEARS
6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C)
                                                                              $ 94454.
7. SAVINGS TO INVESTMENT RATIO
                                               (SIR) = (6 / 1G) =
                                                                                 5.82
    (IF < 1 PROJECT DOES NOT QUALIFY)
8. ADJUSTED INTERNAL RATE OF RETURN (AIRR):
                                                                               12.48 %
```

Estimate: BLDG 4242

Date: 02-Dec-94

Description: RENOVATE HVAC SYSTEM COST ESTIMATE

Project: LIMITED EEAP(HGR) Bid Dat Location: FORT BRAGG, N.C. Job #: Sq. footage: 6000.00 City in LIMITED EEAP(HGR) Bid Date:

94013.04

City indx:Raleigh, NC

Line # Description

	Manhours	Matl	Labor	Equipment	Sub	Total
==========	=========	=======	======	===========	=======	========

0913100280		STALLATION,	INCLUDING	CONDUIT	AND	
Unit values Totals	WIRE, 200 0.31 91.80	AMPERES 9.45 \$2,834	6.71 \$2,013	0.00 \$0	300.00 0.00 \$0	L.F. 16.16 \$4,847
A09 ELECTRICAL	92	\$2,834	\$2,013	\$0	\$0	\$4,847

05-Dec-94

	========	=======	======		=======	========
Line #	Description	on				
	Manhours	Matl	Labor	Equipment	Sub	Total
=======================================	: = = = = = = = = = = = = = = = = = = =		=======		======	
0207183600	HVAC DEMO	MECH EQPT				
Unit values Totals	14.55 4.36	0.00 \$0	314.87 \$94	0.00 \$0	0.30 0.00 \$0	314.87 \$94
U02 SITEWORK	5	\$0	\$94	\$0	\$0	\$94

==========	========	=======	========	========	======	========
Line #	Description	on				
	Manhours	Matl	Labor E	quipment	Sub	Total
=======================================	========	=======	=======	=======	======	=========
1571805070	most tt/ ottm	· É		TRIC COOL (ONLY 5 1.00	Ea.
Unit values Totals	20.00	4195.80	423.50 \$424	0.00	0.00	4619.30
1572500520	AC&V DUCTW	RK GALV S	TL 200 TO		500.00	*1
Unit values Totals	0.10 49.00	1.56 \$779	1.51 \$756	0.00 \$0	500.00 0.00 \$0	3.07
1572501560				s FABRIC ON		
Unit values Totals	METAL HELI 0.06 2.85	1.03 \$51	0.85 \$43	0.00 \$0	50.00 0.00 \$0	1.88
1574705040	AC&V AIR R	TN DMP CL	&WL 45< BL	D 8X6" REGI		
Unit values Totals	0.33 1.67	13.99 \$70	5.51 \$28	0.00 \$0	5.00 0.00 \$0	Ea. 19.49 \$98
1574807506	AC&V VARI	VLM MODUL	ATING MOTO	RIZED DMP 1		
Unit values Totals	0.57 2.86		9.47 \$47	0.00 \$0	5.00 0.00 \$0	
1574807700	VARI VLM M	ODULATING	MOTORIZED	THERMST AI		
Unit values Totals	1.00	29.47 \$88	16.64 \$50	0.00 \$0	3.00 0.00 \$0	Ea. 46.11 \$138
U15 MECHANICAL	80	\$5,728	\$1,348	\$0	\$0	\$7,076

=======================================			=======		=======	
Line #	Description	on				
	Manhours	Matl	Labor	Equipment	Sub	Total
	========	=======	=======		======	========
1633600750	SAFETY SW	NF GEN DU	JTY 240V :	3P200AMP	1.00	T a
Unit values Totals	6.15 6.15	185.20 \$185	95.32 \$95	0.00 \$0	0.00	280.52 \$280
U16 ELECTRICAL	7	\$185	\$95	\$0	\$0	\$280

=======================================	========		=======	========	========	
Line #	Description	on				
	Manhours	Matl	Labor	Equipment	Sub	Total
	=======					
ESTIMATE TOTAL	L 184	\$8,747	\$3,550	\$0	\$0	\$12,297
SALES TAX MATL MARKUP LABOR MARKUP	0.00% 0.00% 0.00%	\$0 \$0	\$0			
EQUIPT MARKUP SUB MARKUP	0.00%		ŞU	\$0	\$0	
CONTINGENCY	CONTINGENC 10.00%	\$8,747	\$3,550	\$0	\$0	\$12,297 \$1,230
BOND PROFIT	0.00% 10.00%					\$0 \$1,230
JOB TOTAL						\$14,756

Estimate: BLDG 4242 Date: 02-Dec-94

Description: RENOVATE HVAC SYSTEM COST ESTIMATE Project: LIMITED EEAP(HGR) Bid Date: Project: LIMITED EEAP(HGR) Bid Dat Location: FORT BRAGG, N.C. Job #: Sq. footage: 6000.00 City in

94013.04

City indx:Raleigh, NC

SUMMARY

	· ·	· · · · · · · · ·				
	Manhours	Matl	Labor	Equipment	Sub	Total
A09 ELECTRICAL U02 SITEWORK U15 MECHANICAL U16 ELECTRICAL	92 5 80 7	\$2,834 \$0 \$5,728 \$185	\$2,013 \$94 \$1,348 \$95	\$\$ \$\$ \$\$ \$	\$0 \$0 \$\$0 \$	\$4,847 \$94 \$7,076 \$280
TOTAL	184	\$8,747	\$3,550	\$0	\$0	\$12,297
SALES TAX MATL MARKUP LABOR MARKUP	0.00% 0.00% 0.00%	\$0 \$0	\$0			
EQUIPT MARKUP SUB MARKUP	0.00% 0.00%		·	\$0	\$0	
TOTAL BEFORE CO CONTINGENCY BOND PROFIT	ONTINGENC 10.00% 0.00% 10.00%	\$8,747	\$3,550	\$0	\$0	\$12,297 \$1,230 \$0
	10.00%					\$1,230
JOB TOTAL						\$14,756